SPECIFICATIONS

FOR

MEANS OF TRANSPORTATION,

PAULINS, STOVES AND RANGES,

AND

LAMPS AND FIXTURES

FOR

USE IN THE UNITED STATES ARMY.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1882.

WAR DEPARTMENT,

Quartermaster General's Office,

WASHINGTON, D. C., *August 18, 1882.*

The following specifications for means of transportation, paulins, stoves and ranges, and lamps and fixtures, adopted for use in the United States Army, are hereby published for the information of officers of the Quartermaster's Department.

RUFUS INGALLS,
Quartermaster General,
Bvt. Maj. Gen'l, U. S. A.

INDEX.

Page.

SPECIFICATIONS

FOR

SIX-MULE UNITED STATES ARMY WAGON,

(Covered.)

The *front wheels* (12 spokes, to have a 3-inch tenon) to be 3 feet 10 inches high, hubs 10 inches in diameter in center, 8¼ inches in front of hubs, and 14¼ inches long. *Hind wheels* (14 spokes, to have a 3-inch tenon) 4 feet 10 inches high; hubs 10¼ inches in diameter and 14¼ inches long; felloes 2½ inches wide and 2¾ inches deep; cast-iron pipe boxes 12 inches long, 2½ inches at large end and 1⅞ inch at small end; tire 2½ inches wide by ⅝ inch thick, fastened with one screw-bolt and nut in each felloe; hubs made of gum, locust, or the best white oak, well seasoned; the spokes and felloes of the best white oak, free from defects; each wheel to have a sand band and linch-pin band 2¾ inches wide of No. 8 band-iron, and two driving bands—outside band 1¼ inch by ¼ inch thick, inside band 1 inch by $\frac{3}{16}$ inch thick; the hind wheels to be made and boxed so that they will measure from the inside of the tire to the large end of the box 6½ inches, and front wheels 6⅛ inches in a parallel line, and each axle to be 3 feet 11⅜ inches from the outside of one shoulder-washer to the outside of the other, so as to have the wagons all to track 5 feet from center to center of the wheels. Axle-trees to be made of the best quality refined American iron, 2½ inches square at the shoulder, tapering down to 1½ inch in the middle, with a ⅞-inch king-bolt hole in each axle-tree; washers and linch-pins for each axle-tree—size of linch-pins, 1 inch wide, ⅜ inch thick, with a hole in each end; a wooden stock 4¾ inches wide and 4 inches deep, fastened substantially to the axle-tree with clips on the ends, and with two bolts 6 inches from the middle, and fastened to the hounds and bolster (the bolster to be 4 feet 5 inches long, 5 inches wide, and 3½ inches deep) with four ½-inch bolts.

The *tongue* to be 10 feet 8 inches long, 4 inches wide, and 3 inches thick at front end of the hounds, and 2¼ inches wide by 2¾ inches deep at the front end, and so arranged as to lift up; the front end of it to hang within 2 feet of the ground when the wagon is standing at rest on a level surface; the tongue-cap to be ⅞-inch round iron, welded into iron 2 inches by ¼, 15 inches long, bolted with three bolts $\frac{5}{16}$ inch diameter.

The *front hounds* to be 6 feet 2 inches long, 3 inches thick, and 4 inches wide over axle-tree, and to retain that width to the back end of the tongue; jaws of the hounds 1 foot 8 inches long and 3 inches square at the front end, with a plate of iron 2½ inches wide by ⅜ inch thick, fastened on the top of the hounds, over the back end of the tongue, with a ½-inch screw-bolt in each end, and a plate of iron of the same size turned up at each end 1½ inch, to clamp the front hounds together, and fastened on the under side and at front end of hounds with a ½-inch screw-bolt through each hound, and a ⅞-inch bolt through tongue and hounds in the center of jaws to secure the tongue in the hounds; a plate of iron 3 inches wide, ¼ inch thick, and 1 foot 8 inches long, secured on the inside of jaws of hounds with two bolts ⅜ inch, and a plate of same dimensions on each side of the tongue, where the tongue and hounds rub together, secured with two rivets; a brace of ⅞-inch round iron to extend from under the front axle-tree and take two bolts in front part of the hounds, same brace ¾ inch round to continue to the back part of the hounds and to be fastened with two bolts, one near the back end of the hounds and one through the slider and hounds, and within 2 inches of slider on wagons finished; a brace over front bolster 1½ inch wide, ¼ inch thick, with a bolt in each end to fasten it to the hounds; the opening between the jaws of the hounds to receive the tongue 4¾ inches in front and 4½ inches at the back part of the jaws.

The *hind hounds* 4 feet 8 inches long, 2¾ inches thick, and 3 inches wide; jaws 1 foot long where they clasp the coupling-pole; the bolster 4 feet 5 inches long and 5 inches wide by 3½ inches deep, with steadying iron 2½ inches wide by ⅜ inch thick, turned up 2½ inches, and fastened on each end with three bolts ⅜ inch; the bolster stocks and hounds to be secured with four ½-inch screw-bolts, and one ½-inch screw-bolt through the coupling-pole; a substantial stay under each back hound and axle to form a clasp under each, and bolted to hound 18 inches forward of axle, and two rivets through each end of coupling-pole.

The *coupling-pole* 9 feet 8 inches long, 3 inches deep, 4½ inches wide at front end, (which will be strapped with $\frac{3}{32}$ by 1¾-inch iron, extending back 9½ inches,) and 2¾ inches wide at the back end; distance from the center of king-bolt hole to the center of the back axle-tree 6 feet 1 inch, and from the center of king-bolt hole to the center of the mortise in the hind end of the pole 8 feet 9 inches; king-bolt 1¼ inch diameter, of best refined iron, drawn down to ⅞ inch where it passes through the iron axle-tree; iron plate 6 inches long, 3 inches wide, and ⅛ inch thick on the double-tree and tongue where they rub together; iron plates 1½ by ¼ inch on the sliding-bar, fastened at each end by a screw-bolt through the hounds; two bolts to pass in sliding-bar within 3 inches of hound. Front bolster to have plates above and below 11 inches long, 3½ inches wide, and ⅜ inch thick, corners drawn out and turned down on the sides of the bolster, with

a nail in each corner and four countersunk nails through plate, and sand-board and plate underneath; two bands on the hind hounds 2 and 2½ inches wide, of No. 10 band-iron; the rub-plate on the coupling-pole to be 8 inches long, 1¾ inch wide, and ¼ of an inch thick.

Tongue, hounds, coupling-pole, axle-beds, and bolsters to be of best quality white oak, well-seasoned; double-tree 3 feet 10 inches long, single-tree 2 feet 8 inches long, all well made of hickory, with an iron ring and clip at each end; the center clip to be well secured; lead-bar and stretcher to be 3 feet 2 inches long, 2¼ inches wide, and 1¼ inch thick; lead-bars, stretchers, and single-trees for six-mule team to be of the best quality of hickory; the two single-trees for the lead mules to have hooks in the middle to hook to the end of the fifth chain; the wheel and middle pairs with open rings to attach them to the double-tree and lead-bar; the fifth chain to be 10 feet long to the fork; the fork 1 foot 10 inches long, with the stretcher attached to spread the forks apart; the links of the double-tree, stay and tongue-chains ⅜ of an inch diameter; the forked chain $\frac{7}{16}$ inch diameter; the fifth chain to be $\frac{7}{16}$ inch diameter to the fork; the fork to be $\frac{5}{16}$ inch in diameter; the links of these and the lock-chains to be not more than 2¼ inches long; a cross chain $\frac{7}{16}$ inch diameter, with key and ring, will be required to cross the bed.

The *body* to be straight, 3 feet 6 inches wide, 2 feet deep, 10 feet long at the bottom, and 10 feet 6 inches at the top, sloping equally at each end, all in the clear or inside; the bed-pieces to be 2½ inches wide and 3 inches deep; front pieces 2⅝ inches deep by 2½ inches wide; front and cross-pieces to have ¼-inch rivet in each end, 1 inch from side rail; tail-piece 2½ inches wide and 3 inches deep, and 4½ inches deep in the middle, to rest on the coupling-pole; top rail 1⅝ inch thick by 1⅞ inch wide; lower rails 1⅛ inch thick by 1⅞ inch wide; three studs and one rail in front, with a seat on strap-hinges to close up as high as the sides; a box 3 feet 4 inches long, the bottom 5 inches wide, front side 9½ inches deep and 8½ inches at the top in parallel line to the body, all in the clear, to be substantially fastened to the front end of the body; to have an iron strap 1 inch wide passing round each end, secured to the head-piece and front rail by a rivet in each end of it passing through them; the lid to be fastened to the front rail with two good strap-hinges, a strap of ⅝-inch iron around the box ½ inch from the top edge and one near the bottom, and two straps, same size, on the lid near the front edge to prevent the mules from eating the boxes; to have a joint hasp fastened to the middle of the lid, with a good wooden cleat on the inside, a strap of iron on the center of the box with a staple passing through it to fasten the lid to; eight studs and two rails on each side; one bolster fastened to the body, 6 inches deep and 4 inches wide at king-bolt hole; bolster to be fastened to body with a ½-inch bolt in each end; front part of bolster to be 16 inches from front side of front end of

sill, and to have a stay under each end and secured to bottom of sill by two bolts; iron rod in front and center of $\frac{11}{16}$-inch round iron, with a head on the top of rail and nut on lower end; iron rod and brace behind, with shoulders on top of tail-piece, and nuts on the under side, and a nut on top of rail; a plate $2\frac{1}{2}$ inches wide, of No. 10 band-iron, on tail-piece, across the body; four screw-bolts through each side stud, and two screw-bolts through each front stud; bolts to be $1\frac{3}{4}$ inch by $\frac{1}{4}$ inch to secure the lining-boards, one bolt through each end of the rails; floor $\frac{5}{8}$-inch oak boards, well fastened to body-bars by wrought nails clinched at bottom; sides $\frac{5}{8}$-inch white pine; tail-boards $\frac{3}{4}$ inch thick, of white pine, to be well cleated with five oak cleats riveted well and strong at each end through the tail-board; an iron plate 3 feet 8 inches long, $2\frac{1}{2}$ inches wide, and $\frac{3}{8}$ inch thick on the under side of the bed-piece, to extend from the hind end of the body to 8 inches in front of the hind bolsters, to be fastened by the rod at the end of the body by the lateral rod, and two $\frac{3}{8}$-inch screw-bolts, one at the forward end of the plate and the other about equidistant between it and the lateral rod. A $\frac{1}{2}$-inch round iron rod or bolt to pass diagonally through the rails between the two hind studs to and through the bed-piece and plate under it, with a good head on the top and nut and screw at the bottom, to be at the top 1 foot 6 inches from inside of tail-board, and on the bottom 10 inches from the hind rod. An iron clamp 2 inches wide, $\frac{1}{4}$ inch thick around the bed-piece, the center bolt to which the lock-chain is attached passing through it, to extend 7 inches on the inside of the body, the ends, top, and bottom to be secured by two $\frac{5}{8}$-inch screw-bolts, the middle bar at the ends to be flush with the bed-piece on the lower side. Two lock-chains secured to the center bolt of the body, one end 11 inches, the other 2 feet 6 inches long, to be of $\frac{5}{8}$-inch round iron; feed-trough sides of yellow pine, to be 4 feet 6 inches long from out to out, the bottom and ends of oak; sides $8\frac{1}{2}$ inches deep, 8 inches wide at bottom, and 12 inches wide at top of feed-box, all in the clear, or inside; well ironed with a band of hoop-iron around the top, one around each end, and three between the ends; strong and suitable irons to fasten them on the tongue when feeding; a good strong $\frac{1}{4}$-inch chain to be attached to the top rail of the body, secured by a staple with a hook to attach it to the trough. The running-gear and the frame-work of the body to be neatly chamfered and rounded.

Brake.

Brake-bar to be made of best white-oak, $2\frac{3}{8}$ inches thick by 7 inches wide, 5 feet 9 inches long; to be made parallel 2 feet 6 inches, then tapered on front side at each end to $5\frac{1}{2}$ inches. Each end of bar on back side to be gained $\frac{1}{2}$ inch deep and 7 inches long, to receive the brake-shoe, so that the front of the brake-block will be on a line with the back of the bar.

Brake-shoe of flat iron on each end 6 inches long, 2¼ inches wide, ½ inch thick, bent around 2 inches on each side to receive a brake-block. Bolted to the brake-bar with two ½-inch bolts each.

Brake-blocks to be made of best oak, 3½ inches thick, 6 inches wide, 15 inches long, curved to fit the wheels; tapered gains to be cut on each side of sufficient depth and width so as to fit in the above-described shoe and leave the full surface of the blocks presented to the wheel.

Brake-roller to be of 1½-inch round iron, 5 feet 4 inches long, and about 18 inches, drawn down to 1½ by ⅝ inch, with two 7/16-inch holes in the end, 4 inches apart. Two bracket stops 1 by ½ inch, welded on the roller-bar, the first one 2 inches from the end, and one 2 feet 4 inches from the end; these are to keep the roller from shifting lengthwise between the brackets. Two fulcrums, 1½ by ¾ inch at roller-bar, drawn to 1 by ¾ inch 1½ inch from the end, forming an eye 1½ inch round by ¾ inch, with hole for ½-inch bolt; the first fulcrum welded on the bar 7¾ inches from the end of the roller, the other 23½ inches, and the fulcrums to measure 4¾ inches from the center of the hole to the center of the roller-bar when finished; the flat end of the bar bent up in a gentle curve in the round part at right angles for a lever 2 feet high; the roller to measure 3 feet 6 inches from out to out when bent, and the top of the lever to stand 10 inches back of a straight line when the fulcrums hang perpendicular in place.

Brackets.—Two brackets which hold the roller-bar in place should be 2 feet 5 inches long, of ⅞-inch round iron, with a clip-tie welded on 1¾ by ½ inch with holes in, to take the hind axle bolts; then 7 inches from the axle form an eye on the brackets 2½ by ⅞ inch, with a hole in 1 9/16 inch to receive the roller-bar; then 6 inches of the front end flattened to bolt to the hind hounds with two ½-inch bolts each, this also taking the place of the hind axle braces.

Brake hangers.—Two brake-bar hangers 3 feet 2 inches long whole length; top end 1½ by ¼-inch iron, welded to 1 foot 2 inches of 2 by ½-inch iron, with a T welded on the bottom end 1¾ inch wide, ½ inch thick, 4½ inches long, with one 1 1/16-inch hole in each, 5 inches from the bottom end, slightly countersunk on both sides, with ½-inch round iron link 9¼ inches long in the clear, with a 3-inch eye-bolt welded in the lower end to bolt through the brake-bar, 3 inches of the top end bent over the top rails and bolted to the top. Middle and bottom rails with three ⅜-inch bolts, 4 feet 10 inches from the front end of the body; the top of the brake-bar to hang 3 feet 4¾ inches from the top of the body.

Lever bracket.—One lever bracket 5½ inches long, ⅝-inch round iron, with a ⅝-inch collar welded on 3¼ inches from one end, with screw and nut to bolt through the center of the bed-piece or bottom rail, 17 inches from the front end of the body, with nut, washer, and screw on the outer end to take the lower end of the brake-lever.

Brake-lever to be 4 feet long, 1½ by $\frac{9}{16}$-inch iron, ¾-inch hole in the bottom end, with three $\frac{7}{16}$-inch draw-rod holes 3 inches apart; the first one 10½ inches from the center of the bottom hole; the lever-catch 3½ inches long formed 20 inches from the center of it to the center of the bottom hole, a 2-inch eye on the top-end; the lever drawn down to 1 by $\frac{9}{16}$ inch under the eye, and tapered back 15 inches; the top of the lever bent in an ogee shape 6 inches forward of a straight line.

Brake-ratchet, whole length 3 feet four inches, one piece, 2 by ¼-inch iron, 15 inches long, with 8 teeth, 1½ inches from center to center and 1 inch deep, welded to one piece of 1¼ by ⅜-inch iron, 11½ inches long, bent around edgewise 2½ inches from the front tooth on a circle of 2½ inches, on a parallel line with the ratchet side, then bent 4 inches of the end out edgewise at right angles; then bent the same 4 inches down square to fit the front stud on the body and bolted to it with two ⅜-inch bolts; then weld on the back end of the ratchet 15 inches of ¾-inch round iron, and on the end of this weld a T 1 foot long, 1⅛ by $\frac{5}{16}$-inch iron, 4 inches from the lower end of it. This T to have a hole in each end to fasten to the top and middle rails with two ⅜-inch bolts, a guard 21 inches long of ½-round iron to fasten to the ratchet on a parallel line 1½ inch from the teeth to keep the lever from whipping against the cover of the wagon; the outer edge of the teeth in the ratchet to stand out 4 inches clear of the body studs.

Draw-rods.—Two draw-rods 2 feet 7 inches long, ⅝-inch round iron, with slot clevis made of 1½ by ¼-inch iron on one end to fasten to the roller fulcrums with two ½-inch bolts; the front end to have screws cut 10 inches long, and to pass through the brake-bar, with a nut on each side of the bar, which will allow the bar to be let out or taken up as the blocks wear out.

Brake-rod to be ½-inch round iron, with clevis formed on each end of 1¼ by ¼-inch iron, to connect the brake together with two ⅜-inch bolts.

Six bows, of good ash or oak, 2 inches wide and ½ inch thick, with three staples to confine the ridge-pole to its place; two staples on the body to secure each end of the bows; one ridge-pole 12 feet long, 1¾ inch wide by ⅝ inch thick; two rings on each end of the body to close and secure the ends of the cover; a staple in the lower rail, near the second stud from each end, to fasten the side cords; the cover to be of the first quality cotton duck, 10-oz., 28½ inches wide, army standard, cut 15 feet long and four widths of material, made in the best manner, with four hemp cords 30 inches long on each side and one through each end 13 feet long to close it at both ends. The outside of the body and feed-trough to have two good coats of white lead, colored to a blue tint; the inside of them to have two coats of Venetian red paint; the running-gear and wheels to have two good coats of Venetian red darkened to a chocolate color; the hub and felloes to be well pitched instead of painted, if required.

An extra *king-bolt* and two extra *single-trees* to be furnished with each

wagon, the king-bolt and single-trees similar in all respects to those belonging to it.

Each side of the body of the wagon to be marked U. S., and numbered as directed; all other parts to be lettered U. S.; the cover, feed-box, bolts, and linch-pins for each wagon to be put up in a strong box (coopered) and the contents marked thereon. Each wagon to be marked with the name and residence of the maker.

It is agreed and distinctly understood that the wagons are to be so constructed that the several parts of any one wagon will agree and exactly fit those of any other, so as to require no numbering or arranging for putting together, and all the materials used for their construction to be of the best quality, all the wood thoroughly seasoned, and the work in all its parts faithfully executed in the best workmanlike manner.

The work shall be inspected from time to time as it progresses by an officer or agent of the Quartermaster's Department, and none of it shall be painted until it shall have been inspected and approved by said officer or agent authorized to inspect it.

Weight of wagon about 1,950 pounds.

X [illegible] to be

[illegible] or hand-sewed.

SPECIFICATIONS FOR BODY FOR SIX-MULE ARMY WAGON.

MATERIAL.—Unless otherwise specified, to be best quality white oak, thoroughly seasoned and free from defects. Iron, unless otherwise specified, to be best quality stone coal. Bolts and rivets to be best Norway iron. Paints and oils to be strictly pure and of best quality.

BODY.—To be straight, 10 feet long at the bottom and 10 feet 6 inches long at the top, sloping equally at each end; 3 feet 6 inches wide, 24 inches high,—all in the clear or inside; 3 feet 10 inches wide,—out to out of bottom rails.

BOTTOM RAILS (or BED PIECES).—To be 10 feet 10 inches long, from out to out (inclusive of ⅞-inch finish of tenon outside of tail piece), 2½ inches wide, 3 inches deep.

MIDDLE RAILS.—To be 10 feet 11½ inches long, 1⅛ inch thick, 1⅞ inch wide, placed 11½ inches, in the clear, above the bottom rail; secured to studs by 1½x3-16-inch finished head nails.

TOP RAIL.—To be 11 feet 2 inches long, 1⅛ inch thick, 1⅞ inch wide, placed 9⅝ inches, in the clear, above middle rail. Ends of top and middle rails to project 3 inches outside of body rods.

FRONT CROSS RAIL.—To be 1⅛ inch thick, 2 inches wide, sunk ¼ inch on middle rail, side beveled to flare of bed, ends to project 2 inches outside of middle rail.

MIDDLE, TOP, and FRONT CROSS RAILS to have ¼-inch rivet in each end.

FRONT CROSS BAR (or FRONT PIECE).—To be 2⅝ inches deep, 2½ inches wide, to enter bottom rails 4½ inches from their front ends; size of tenon 2½x1 inch; size of rail mortise 2⅝x1 inch. Bar to be rabbeted ⅝x⅝ inch, for floor.

CROSS BARS (or CROSS PIECES).—Four in number, spaced equidistant between front bolster and tail piece, as position of studs and wear-iron will permit, the center bar to be 2⅝ inches deep, others 2 inches deep, all 2½ inches wide, all mortised into bottom rails; size of tenon 2⅝x1 inch, size of rail mortise 2⅝x1 inch. All cross bars to be neatly chamfered on underside. Tenons of all cross bars (except center) to be finished ⅝-inch outside of rails; all cross bars to have one ¼-inch-rivet vertical in each end, placed 1 inch inside of rails.

TAIL PIECE.—To be 4 feet 10 inches long, out to out, 2½ inches wide; 4½ inches deep at coupling pole and 3⅝ inches deep at rail mortises, tapered to 2⅝ inches deep at ends. Tail-piece-tenon to be 2½x1 1-16 inch. Rail mortise to be 2⅝x1 1-16 inch; to be rabbeted ⅝x½ inch for floor, and to have a plate of No. 10 band iron, full width and length of piece, sunk flush with floor and secured by eight 1½-inch No. 12 screws. To have tail bolt-hole, ½ inch diameter, through plate and tail piece, in center.

STUDS.—Nineteen studs in frame of body,—eight on each side, and three in front; side studs to pass through the three side rails, the first and eighth to be 2½ inches from tail piece and front cross bar, the others spaced equidistant between them. Size at top of bottom rail 2½ inches wide by ⅝ inch thick; at top 1⅝ inch wide

by ¾ inch thick. Front studs to pass through front cross bar and rail, the outside or end studs to be 5¼ inches in from side panel. Size of front studs 2¼ inches wide, ¾ inch thick. All studs to be pinned in rail and bar. Side studs to be chamfered to 1½-inch face between bottom and middle rails and to 1⅜-inch face between middle and top rails.

PANELS.—To be of clear white pine, ⅝ inch thick, and width to fill neatly the space between side rails and between front rail and front cross bar. Each panel to be one piece, and to be secured to each stud by two 1¾x¼-inch step bolts. Lower side panel to be flush with front end of middle rail, and to be secured to front box by five 1¼-inch No. 10 screws; upper side panel to be flush with front edge of front cross rail, front end to be neatly rounded in.

FLOOR.—To consist of four ⅝-inch oak boards of equal width, securely fastened to cross bars of body with wrought nails, clinched under bars.

SEAT.—Of white oak ⅞ inch thick, to form upper front of body; 12 inches wide in center, hight of sides at ends, secured to front cross rail and panels by two 8-inch heavy wrought strap hinges, applied with ⅝-inch No. 10 screws. To have cleats full width of boards, 1½ inches wide, ¾ inch thick, placed 2 inches from ends on under side, and secured by two ¼-inch rivets and two 1¼-inch No. 12 screws in each.

SEAT RESTS.—To be 11½ inches long, 2 inches wide, ⅞ inch thick, secured to middle rail by three ¼-inch rivets in each, two of which take bow staples.

FRONT BOX.—A box at front end of body, of ⅞-inch clear pine, 3 feet 4 inches long at front cross rail, 3 feet 2¾ inches long at top in front, 5 inches wide at bottom, 9½ inches deep at front, 8½ inches wide at top in parallel line to the body, all in the clear or inside. To be riveted to ends of middle rails, and secured to lower side panels by screws (See PANELS) and to front cross bar with 8d cut nails. To have straps of ⅝-inch hoop iron lengthwise around the box, ½ inch from top edge, and one near the bottom (ends of these straps to be carried under side panel), and a strap of ⅝-inch iron passing under each end, riveted to front cross rail, and securely attached to front cross bar.

Lid to extend over front ends ¼ inch, rounded on edges, secured to the front cross rail by 8-inch light T hinges, applied 6 inches, in the clear, from each end of the lid with ⅝-inch No. 10 screws in strap, and 1-inch No. 10 screws in T parts. To have 6-inch hinged hasp and staple fastened to middle of lid with two ⅞-inch No. 10 screws and two rivets, the latter taking inside cleat 2 inches wide, ¾ inch thick, 7 inches long—staple applied with 1-inch No. 10 screws. Lid to have two straps of ⅝-inch hoop iron near the front edge. All straps to be of best quality iron, secured with ⅞-inch barrel nails spaced not more than 3 inches apart.

TAIL GATE.—To be 3 feet 10 inches long, 23 inches high in center, hight of bed at ends. Panels or tail boards of ¾-inch clear white pine; lower 12 inches, upper 14 inches wide in center, properly notched for middle rail. Cleats, five in number, of white oak, 2 inches wide, ¾ inch thick, extending from top to bottom as follows, viz.: one in center, one 5 inches from each end, and two diagonally from bottom of outer to top of center

cleats; all to be substantially secured to panels by not less than two ¼-inch rivets and six 1¼-inch No. 12 screws in each cleat. Gate to have button on near side riveted to panels; cleats to be neatly chamfered.

FRONT (OR ROCKING) BOLSTER.—A bolster 4 feet 5 inches long, 4 inches wide, and 6 inches deep in center, with 1⅛ inches rock, to be securely fastened to front part of body (its front side to be 16 inches from front side of front cross bar) by two stays of 2x¼-inch iron and by two ½-inch bolts; stays secured to rails by two ⅝-inch bolts, one 5 inches in front and the other 5 inches in rear of bolster.

Bolster to have plate 11 inches long, 3½ inches wide, ⅝ inch thick, with corners drawn out to lap over sides 2 inches, and secured by a 1¼-inch nail in each corner. Plate secured by four 2½x⅝-inch nails, countersunk heads. Plate and bolster to have 1⅛ inch diameter king-bolt hole in center.

Bolster to have two ⅝-inch rivets through each end,—one, vertical, 7 inches from ends, and one, horizontal, 3 inches from ends. Bolster to be neatly chamfered, to be notched to rest on floor, and to be notched 1 inch for bottom rail. Ends to be neatly rounded.

IRON WORK OF BODY.

RODS.—To have six rods of 11-16-inch round iron to pass through side rails, two at front taking front cross rail and front cross-bar tenon, two at center taking bed clamps and eye of cross-chain plate, and two at back end taking tail piece, bed plates and eyes of hind braces; hind rods to have nut on top rail and shoulder on tail piece. Two lateral rods of ½-inch round iron passing from near top of seventh to within two inches of bottom of eighth stud, taking bed plates; all rods, excepting back rods, to have neatly rounded heads at top, and all to have nuts at bottom.

BRACES.—Two hind braces of 11-16-inch round iron passing through and resting with shoulder on tail piece, 4½ inches outside of bottom rails, with nuts under rail piece. Two braces of ½-inch round iron, to serve as seat-stops, to extend from inside of top rail to a point on front cross rail 5 inches from inside of panel, flattened on rails and secured to them by ½-inch bolts.

BED PLATES.—Of 2½x⅝-inch iron, 3 feet 8 inches long, on under side of bottom rails and tail piece, flush with the latter, secured to rail by back body rods, lateral rods and two ⅝-inch bolts, one taking tenon of second cross bar from the rear, the other equidistant between it and the lateral rod.

CLAMP OR LOCK-CHAIN PLATES.—A clamp of ½-inch iron, 2 inches wide, to clasp the bottom rail at center bar, taking center rod, and extending 7 inches on inside of body and a corresponding distance on under side of center bar, the ends to be secured by two ⅝-inch countersunk-head bolts, square necks.

WEAR IRONS.—To be 6¾ inches long, of ⅝-inch iron, swelled at outer edge of rail to ¾ inch thick, extending ½ inch on rail, secured to it by two 3½x5-16-inch bolts passing vertically through rail; forward bolt to take tenon of fourth cross bar from the rear; front end of iron to be 2 feet from front side of front bolster.

LOCK CHAINS.—Two lock chains of ⅝-inch iron, nine twisted links to the foot, to be secured to center bolt of body by a ½-inch iron ring, 2½ inches inside diameter; one end to be 11 inches long

exclusive of hook, the other 2 feet 6 inches long; long end to have a 7-16-inch ring, 2¼ inches diameter, at end; short end to have a 7-16-inch lock link, 4½ inches long in the clear, with a 5-16-inch movable ring, 1¼ inches inside diameter.

Lock-chain hook to be 6 inches long, connected to lock link by a 2-inch straight link.

Lock-chain body hook to be of ⅝-inch round iron, placed 2½ inches below middle rail in fourth stud from rear on each side, clinched inside.

FEED-BOX CHAIN.—To be 23 inches long inclusive of hook, of ½-inch iron, nine twisted links to the foot, secured to top rail 12 inches from tail gate by a ½-inch iron staple, clinched through rail. Hook of ⅝-inch iron, 3 inches long—neatly made.

CROSS CHAIN.—Of 7-16-inch iron, nine straight links to the foot, one end to have a 3-inch lock link with ½-inch movable ring, 1¼ inches inside diameter, and hook 4½ inches long attached to lock link by a 2-inch straight link; eye to receive chain to be of ½-inch iron attached to center rod of body (See RODS).

BOW STAPLES.—To have twelve staples of ⅞x½-inch iron, beveled edge, six large and six small on each side of bed to receive ends of bows, secured by two ½-inch rivets in each. Large staples to have clear space of 2⅛x⅝ inch and small staples 1⅞x⅝ inch.

COVER RINGS.—Two ½-inch iron rings, 1½ inches inside diameter on each side of bed, attached to ½-inch iron staple 3½ inches long; staples to enter bottom rail near first and eighth studs.

COVER STAPLES.—Four staples, same size as ring staple, on each side of bed for attachment of cover, clinched through middle rail between first and second, third and fourth, fifth and sixth, and seventh and eighth studs.

PAINTING.

To have one good priming coat of lead color, to be followed when dry by two good coats of Prussian-blue. The inside of bed to have two good coats of Venetian-red, the bottom of bed to have one coat of same. Each side of bed to have the letters U. S., 4 inches high, in third lower panel from front. The maker's name and date of contract to be applied in first upper panel—all in red.

GENERAL PROVISIONS.

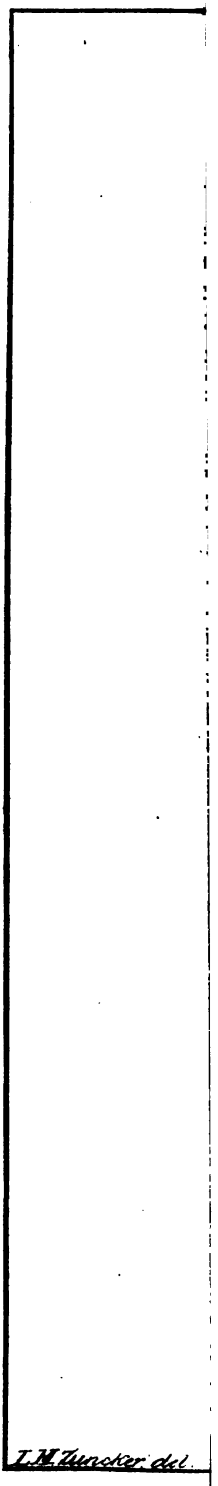
To have washers under all nuts and rivets coming in contact with wood-work. Width of nut to be 1½ times the diameter of bolt, thickness of nut to be equal to diameter of bolt. Bolts of any one diameter to have same pitch and same number of threads.

Front ends of bottom and middle rails to be neatly rounded in. Bottom rails to be neatly chamfered. Top and middle rails to be neatly finished at ends and chamfered between staples. Joints to be close and neatly made, and the work in all its parts to be faithfully executed in the best workmanlike manner.

INSPECTION.

The work will be inspected as it progresses by an officer or agent of the Quartermaster's Department, and none of it shall be painted until it shall have been approved and stamped by said officer or agent authorized to inspect it.

JEFFERSONVILLE DEPOT OF THE QUARTERMASTER'S DEPARTMENT.
Jeffersonville, Ind., February, 1887.



SPECIFICATIONS

FOR

TWO-HORSE AND FOUR-HORSE OR MULE WAGON,

AS ALTERED AT FORT LEAVENWORTH, KANSAS, DEPOT, FROM THE WAGON RECOMMENDED FOR ADOPTION BY THE BOARD OF OFFICERS CONVENED AT PHILADELPHIA, PA., BY VIRTUE OF PARAGRAPH 3, SPECIAL ORDERS NO. 264, WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE, DECEMBER 27, 1875. APPROVED BY THE SECRETARY OF WAR, NOVEMBER 21, 1878.

Body.—The body to be straight, 3 feet 4 inches wide, 1 foot 9 inches deep, 9 feet 6 inches long at the bottom and 10 feet at the top, sloping equally at each end, all in the clear or inside.

Sides, &c.—The sides, strips, head and tail-boards, and tool-box of white pine.

Floor.—The floor of yellow pine and the bars of white oak; the floor 9 feet 10½ inches long, 3 feet 4 inches wide, ⅞ inch thick.

Sides.—The sides 22 inches wide, ⅞ inch thick, 9 feet 9½ inches long at bottom, with four strips or cleats of white oak 3¼ inches wide, 1 inch thick on the outside, to keep the body in place between the standards; the front one placed 1 foot 7½ inches from the front end and the other 2 feet 6 inches from the back end; a strip 4½ inches wide, ⅞ inch thick, on outside at the bottom, the whole length of side between the cleats; all the strips, cleats, and the floor well nailed with clinch-nails; the top edge of sides and ends of body ironed with hoop-iron ⅞ inch wide, ⅛ inch thick, fastened with screws; two oak strips 2 feet long, 2½ inches wide, 1¾ inch thick, bolted to the under side of body, back of the hind bolster, with three ⅝-inch bolts in each.

Iron straps.—Eight iron straps, (four on each side of body,) 20 inches long, 1⅛ inch wide, ¼ inch thick, with both edges swedged down to a feather edge, with a ½-inch round shank and nut on the bottom to secure the bars, and fastened to the inside of sides with 4 rivets in each; the first strap placed 5 inches from the front end of side, to receive a bottom bar 3 feet 10 inches long, 3¼ inches wide, 1½ inch deep; the second strap 4 feet 2 inches from front ends, to receive a bar 4 feet 6 inches long, 3½ inches wide, 1¾ inch deep, with an iron brace on the outside 20 inches long, of ⅝-inch round iron, with 1¼-inch shoulder, resting on center-bar; a ½-inch shank and nut on bottom, and three bolts through brace, side, and strap, and three rivets through side and strap at the top and bottom; the third

strap 6 feet 3½ inches from front end, to receive a bar 4 feet long, 3¼ inches wide, 1½ inch deep; the tail strap placed even with the end of side at the bottom to receive the tail-bar, 4 feet 6 inches long, 3½ inches wide, 1¼ inch deep, with a brace on the outside 20 inches long, of ⅝-inch round iron, with 1¼-inch shoulder, resting on end bar; a ½-inch shank and nut on lower end, the top flattened out to 1¼ inch wide, ¼ inch thick, and bent out back to form the eye through tail-gate, bolted through the sides and straps with 4 bolts, and to have 3 rivets through sides and straps; a loose ring, 2½ inches in diameter, of ⅝-inch round iron, through a shank riveted to brace at top to receive the tail-chain; feed-box chain 11 inches long, including hook, is also attached to this ring.

Tail gate.—Tail gate 3 feet 9 inches long, 1 foot 8 inches wide in middle, and 1 foot 6 inches wide at the ends, ⅞ inch thick, to close up against the ends of sides, hung with three strap-hinges 1⅛ inch wide, ¼ inch thick, reaching to top of gate, fastened with five rivets in each hinge and three eye-bolts through tail-bar, and a 7/16-inch round rod through hinges and eye-bolts. A plate 2½ inches wide, ⅛ inch thick, on the inside and outside at each end of gate, reaching from top to bottom, riveted with 7 rivets in each. A pin through eye, (to hold up the gate,) attached to bolt at top of brace by a small chain; a staple of ⅝-inch round iron, 2 inches wide, riveted in hinges near the top, to receive a chain 7 feet 6 inches long, links of 5/16-inch iron, with a hook at one end and a ring at the other; the tail-bar and floor placed 1 inch outside of the ends of side boards so that the tail-gate will shut on top of floor.

Head-board.—Head-board 21½ inches high, ⅞ inch thick, with two pine cleats 4 inches wide, ⅞ inch thick, placed 6¼ inches from each end, well nailed with clinch-nails, held in place by 4 oak cleats on inside of side boards, with a tool-box fastened to front side.

Tool-box.—Tool-box 3 feet long, 10 inches deep on front side, 5½ inches wide at bottom and 8½ inches at top, with a lid hung with two T-hinges and a joint hasp in the middle, and well ironed with hoop-iron ¾ inch wide passing around each end and along the top edge and fastened to front board; a ⅝-inch round rod across the body, in front of head-board and above the lid of tool-box, with a handle on one end and a nut on the other.

Side plates.—Four plates 5½ inches high, 3 inches wide, ⅛ inch thick, on outside of body at standards, turned under the body one inch where it rests on the bolsters.

Bows.—Six bows, of good ash or oak, 2 inches wide, ½ inch thick, with three staples to confine the ridge-pole to its place; the front bow fastened to the second bow with two ¼-inch bolts 18 inches from lower end, and at the top with a leather strap 31 inches long, 1½ inch wide; two staples in sides of body to secure each end of bow.

Ridge-pole.—One ridge-pole 8 feet 8 inches long, $1\frac{3}{4}$ inches wide, $\frac{5}{8}$ inch thick.

Rings.—Four rings on each side of body to fasten the cords of the cover.

Seat-boards.—Seat-board 3 feet $4\frac{3}{4}$ inches long, 14 inches wide, $\frac{7}{8}$ inch thick, with ends and back; ends 5 inches wide; back 6 inches wide in center and $\frac{7}{8}$ inch thick, of white pine, secured by four corner plates $4\frac{1}{2}$ inches long each way, $\frac{7}{8}$ inch wide, $\frac{3}{16}$ inch thick, fastened with six wood-screws in each; the seat to rest on top of two elliptic springs 26 inches long, $1\frac{1}{2}$ inch wide, two leaves each, to rest on uprights 2 feet $5\frac{1}{2}$ inches long, $1\frac{1}{2}$ inch wide, $1\frac{1}{4}$ inch thick, of white oak, bolted to insides of body with eight $\frac{5}{8}$-inch bolts. Three movable seat-boards 3 feet $3\frac{1}{2}$ inches long, 12 inches wide, $\frac{7}{8}$ inch thick, with oak cleats on under side, to rest on two side bars of hickory 8 feet 4 inches long, $2\frac{1}{2}$ inches wide, $1\frac{1}{2}$ inch thick, with four elliptic springs 28 inches long, $1\frac{1}{2}$ inch wide, three leaves each, resting on four iron straps 17 inches long, $1\frac{1}{8}$ inch wide, $\frac{5}{16}$ inch thick, bent over and resting on top edge of sides of body.

Foot-board.—A foot-board on the front end of body, 3 feet 4 inches long, 14 inches wide, $\frac{7}{8}$ inch thick, of yellow pine, held in place by two $\frac{5}{8}$-inch iron braces $19\frac{1}{2}$ inches long, flattened at each end, and two rests $19\frac{1}{2}$ inches long, 1 inch wide, $\frac{3}{8}$ inch thick, secured to front head-board with four $\frac{5}{8}$-inch bolts and to the foot-board with eight $\frac{5}{16}$-inch bolts.

Lock-chains.—Two lock-chains, one end 11 inches long, the other 2 feet 6 inches long, of $\frac{5}{16}$-inch round iron, attached to side of body by a forked clip with four bolts in each, and with a hook on the side of body to hang chain on.

Plates.—Two plates 7 inches long, $1\frac{1}{2}$ inch wide, $\frac{3}{4}$ inch thick, with two bolts in each, for the front wheels to strike against in turning the wagon.

Brake.—A saw or ratchet $23\frac{1}{2}$ inches long, $1\frac{3}{4}$ inch wide, and $\frac{3}{8}$ inch thick, with arms 11 inches long, bolted on the right or off-hand side of the body, near the front end, with two $\frac{5}{8}$-inch bolts at each end, with two iron plates on inside of side boards underneath the bolt heads; a guide of $\frac{1}{2}$ inch round iron on the inside of lever, with the ends flattened and bolted to the ratchet arms, with one (1) $\frac{5}{8}$-inch bolt at each end; a lever with jaws, for foot or hand use, 50 inches long, $1\frac{3}{4}$ inch wide, $\frac{1}{2}$ inch thick, to retain this size two feet from the lower end, then taper to one (1) inch wide at top end, with a foot-rest bent outward at right angles $4\frac{1}{2}$ inches, and bent back 1 inch; 5 inches from the top end, lever curved forward 9 inches from ratchet, ending below in an eye to receive $\frac{5}{8}$-inch bolt welded to a forked plate 10 inches long, $\frac{5}{8}$ inch thick at shoulder, securely attached to the under side of bottom of body with three $\frac{5}{8}$-inch bolts; connecting-rod 6 feet long, of $\frac{1}{2}$-inch round iron, attached to front

lever by a fork, 1¼ inch by ¼-inch iron, with bolt through both 11½ inches from lower end of lever; the back or rear end secured to back lever in like manner; back lever or roller-bar 1⅜-inch round iron, 3 feet 5¾ inches long, to where end bent upward 22½ inches and flattened to 1½ inch wide, by ½ inch thick, with eye to attach connecting-rod, with two fulcrums each 4½ inches long, 1½ inch wide at roller, by ⅜ inch thick, and 1½ inch by ⅝ inch at lower end, with eye to attach the two fulcrum-rods, fulcrums 20 inches apart; a guide securely attached to roller-bar on the inside of each bracket; the roller brackets are formed of ⅞-inch round iron, with eyes through which the roller passes 6 inches in front of the hind axle, with clip fastening under the axle, and bolted to the under side of the hind hounds 20 inches in front of hind axle, with two ⅜-inch bolts in each, bolts 8½ inches apart; two fulcrum rods 2 feet 6 inches long, ⅝-inch round iron, with a fork of 1¼ by ¼-inch iron, connecting fulcrum with a ⅜-inch bolt through each, and connecting brake-bar with nuts on rods at each side of the bar to take up the wear in the block and to adjust the bar to the proper purchase upon the wheels; brake-bar of oak or hickory, 5 feet 8 inches long, 5 inches wide at fulcrum rods, and tapering to 3⅝ inches wide at each end, 1⅞ inch thick, with a clip at each end 5¼ inches long, 2 inches wide, ⅜ inch thick, bent around 1½ inch on each side to receive the rub-blocks, which are to be 5 inches wide, 2½ inches thick, 11 inches long, the clips bolted to the bar with two ⅜-inch bolts each, one bar 3 feet 9½ inches long, 5½ inches wide, 2 inches thick, bolted to top of hounds with four ⅜-inch bolts, the bar tapering from hounds to 2½ inches wide at each end; the hangers which attach the hound-bar to the brake-bar, two links of ½-inch round iron, 8 inches long, with eye-bolts ⅝-inch round iron, the eye-bolts attached to hound-bar to extend down 3½ inches, flattened at lower end to 2½ inches wide, $\frac{3}{16}$ inch thick, forming a guide for connecting link, which is closed in the center; the hook and link portable attachment of the hound-bar to the bed, a strap of iron 2 inches wide, ¼ inch thick, extending 4 inches on the under side of hound-bar, which eye bolts pass through and hold in place, bent up 3 inches at end of bar, top end rounded with eye to receive links, two links at each end of hound-bar 2 inches long, ⅜-inch round iron; two straps 1⅛ inch wide, $\frac{3}{16}$ inch thick, 8 inches long, and bolted on each side of bed with two ⅜-inch bolts each, with a hook on lower end to receive connecting links.

Tongue.—The tongue to be 10 feet 6 inches long, 4 inches wide, 2¼ inches deep at front end of hounds, 1¾ inch wide, and 2¼ inches deep at point of front end, and so arranged as to lift up the front end of it to hang within 2 feet 6 inches of the ground when the wagon is standing at rest on a level surface; the tongue-cap to be of ⅝-inch round iron, welded to side pieces 2 inches wide, ⅛ inch thick, and 13 inches long, bolted with three

$\frac{5}{16}$-inch bolts to the tongue; a plate $3\frac{1}{2}$ inches square nailed on top where doubletree rests; a hasp for doubletree 10 inches long, 2 inches wide, $\frac{1}{4}$ inch thick, fastened to tongue by a staple; doubletree hammer, or bolt, $8\frac{1}{2}$ inches long, of $\frac{5}{8}$-inch round iron; staple in top of tongue for feed-box, 4 feet $1\frac{3}{4}$ inch from the center of doubletree bolt; two rings 6 inches in front of feed-box staple.

Front hounds.—Front hounds 6 feet long, $2\frac{1}{4}$ inches deep, $3\frac{1}{2}$ inches wide over axle, and to retain that width to the back end of tongue; jaws of hounds 1 foot 6 inches long and $2\frac{1}{4}$ inches square at the front end, with a plate of iron $1\frac{3}{4}$ inch wide, $\frac{3}{8}$ inch thick, fastened on top of hounds over the back end of tongue with a $\frac{3}{8}$-inch screw-bolt in each end, and a plate of iron of the same size turned up at each end 2 inches to clasp the front hounds together, and fastened on the under side and at the front end of hounds with a $\frac{3}{8}$-inch screw-bolt through each hound and a $\frac{5}{8}$-inch key-bolt through tongue and hounds, in the center of jaws, to secure the tongue in the hounds; two plates 2 inches square, fastened with four nails on outside of jaws, at bolt-holes; a plate 1 foot 6 inches long, $2\frac{1}{4}$ inches wide, of No. 8 iron, secured on the inside of each jaw of hounds with two $\frac{1}{4}$-inch countersunk bolts, and a plate of same dimensions on each side of tongue where the tongue and hounds rub together, secured with two rivets; a brace of $\frac{5}{8}$-inch round iron to extend from under the front axle and take two bolts in front part of the hounds, the same brace to extend rearward to the back part of hounds and to be fastened with two bolts, one through slider and hounds and one through hounds 4 inches in front of slider; a brace or guard over sand-bolster of $\frac{1}{2}$-inch square iron, 2 feet 4 inches long, with a bolt in each end to fasten it to the hounds; the opening between the jaws of hounds to receive the tongue $4\frac{7}{16}$ inches wide in front and $4\frac{3}{16}$ inches at the back part of jaws.

Sand-bolster.—The lower or sand-bolster 4 feet 6 inches long, $3\frac{1}{2}$ inches wide, 3 inches deep, fastened with four $\frac{1}{2}$-inch screw-bolts through bolster, hounds, axle-stock, and braces.

Slide-bar.—Slider 4 feet 1 inch long, $1\frac{3}{4}$ inch wide, 2 inches deep, with a plate on top 4 feet long, $1\frac{1}{4}$ inch wide, $\frac{1}{4}$ inch thick, fastened at each end by a screw-bolt through the slider, hounds, and lower brace, and a rivet in the center; the upper and lower bolsters each to have a plate 10 inches long, 3 inches wide, $\frac{3}{8}$ inch thick, with the corners drawn out and turned over on the sides of bolsters, with a nail in each corner and four countersunk nails through plates.

Front axle.—Axle-stock 4 feet $\frac{1}{2}$ inch long, $3\frac{1}{2}$ inches wide, $3\frac{1}{4}$ inches deep, fastened to axle with clips $1\frac{1}{4}$ inch wide, $\frac{1}{4}$ inch thick at ends, and a bolt through axle and stock at 6 inches each side of center, and two hooks for stay-chains.

Front or loose bolster.—Loose bolster 4 feet 5 inches long, $3\frac{1}{2}$ inches

wide, 4½ inches deep in the middle and 3 inches deep at ends, with standards 15 inches high, 2¾ inches wide, 1 inch thick, with a tenon 2 inches wide into bolster, with a plate 6 inches long, 1 inch wide, ⅛ inch thick, nailed to the inside edge; a strap ¾ inch wide, 3/16 inch thick, on bolster under shoulder of standard, and turned down 2 inches on each side of bolster, with a rivet through bolster; a plate 2 inches wide, 3/16 inch thick, on bolster close to inside of standard, turned down 2 inches on each side of bolster, with two nails in each side and one nail in top; a ⅜-inch bolt through bolster and standard; two hooks in rear side of bolster, 14 inches each side of center, and clinched on front side, to receive two chains 22 inches long, bolted to each side of the coupling-pole 18 inches from king-bolt; width between standards 3 feet 6½ inches, to receive body 3 feet 6 inches wide, outside.

Hind hounds.—Hind hounds 4 feet 11 inches long, 2½ inches deep, 2¾ inches wide back and 2½ inches wide front; jaws 10 inches long and 4 inches wide at the end where they rest on coupling-pole.

Hind bolster.—Hind bolster 4 feet 5 inches long, 3½ inches wide, 3 inches deep, with standards and irons the same as on the loose bolster, fastened with four ½-inch bolts through bolster, hounds, axle-stocks, and braces under axle; a brace under hind hounds and axle of ⅝-inch round iron, and bolted to hounds 1 foot 8 inches forward of axle.

Hind axle-stock.—Axle-stock 4 feet ½ inch long, 3½ inches wide, 3¼ inches deep, fastened to axle with clips 1¼ inch wide, ¼ inch thick at the ends, and with a bolt through axle and stock 6 inches each side of center; jaws of hind hounds fastened together with two bolts through jaws, and a band of 1½-inch No. 10 iron at the end of jaw; a plate 9 inches long, 3½ inches wide, of No. 10 iron, on top of jaw; a loose coupling-band, 1¼ inch wide, ¼ inch thick, around jaws and coupling-pole, with a ⅝-inch bolt, 7½ inches long, through bands, hounds, and coupling-pole.

Coupling-pole.—Coupling-pole (loose) 8 feet 9 inches long, 3½ inches wide, 2⅜ inches deep, with a rivet through front end; a plate 5 inches long, 2½ inches wide, 3/16 inch thick, nailed on top at king-bolt with six countersunk nails; a rub-plate 8 inches long, 1¼ inch wide, ¼ inch thick, fastened with two rivets on under side, over slider.

Doubletree.—Doubletree 3 feet 10 inches long, 4 inches wide, 1½ inch thick, with two clips for singletrees and two for stay-chains.

Singletree.—Singletrees 2 feet 8 inches long, 2¾ inches wide, 1½ inch thick, with clip and ring on each end, and a clip in center with an open ring to attach to doubletree; a plate on under side of doubletree 6 inches long, 3 inches wide, ⅛ inch thick, and one on top 2 inches square.

Wheels.—Front wheels 3 feet 8 inches, and hind wheels 4 feet 8 inches high.

Spokes.—Sixteen spokes 2 inches wide and 2 inches thick at hub, and 2 inches wide and 1½ inch thick at the felloe.

Felloes.—Eight felloes 2 inches wide, $2\frac{3}{8}$ inches deep.

Hubs.—Hubs 9 inches diameter at flanges, $3\frac{1}{2}$ inches diameter at front, 4 inches diameter at back end, 12 inches long, including sand-band 1 inch wide, $\frac{1}{4}$ inch thick, and a band on front $2\frac{1}{4}$ inches wide, $\frac{1}{4}$ inch thick; spokes and felloes pressed together (by the Archibald press or other process) and secured with eight $\frac{9}{16}$-inch screw-bolts through flanges and spokes; box 10 inches long, bored out to a diameter of 2 inches at back or shoulder end and $1\frac{3}{32}$ inch at front end, or to taper $\frac{1}{4}$ inch to the foot in length.

Tires.—Tires 2 inches wide, $\frac{1}{2}$ inch thick, fastened with eight screw-bolts, one in each felloe. Spokes and felloes of white oak, thoroughly seasoned; hub of cast-iron with cast-iron bands on each end, the front band a screw-band.

Axles.—Axles, of the best quality American refined hammered iron, 2 inches square at shoulder, tapering down to $1\frac{3}{8}$ inch in the middle, with a $\frac{7}{8}$-inch king-bolt hole in front axle; arms 10 inches long between shoulder and nut, 2 inches diameter at shoulder, and the taper $\frac{1}{4}$ inch to 1 foot in length; an $\frac{1}{8}$-inch groove the whole length of arm on top to retain the oil; a right and left-hand thread on end of arms, to be U. S. standard, $1\frac{1}{4}$-inch V-thread, seven threads to the inch, with a $1\frac{3}{4}$-inch six-sided nut or burr $1\frac{1}{4}$ inch thick, with flange-collar $2\frac{1}{2}$ inches in diameter. Axles to be 4 feet $2\frac{1}{2}$ inches long from outside of one shoulder-washer to the outside of the other, so as to track 5 feet from center to center of wheels. Two (2) extra nuts or burrs of the kind prescribed herein for ends of axle-arms to be furnished with each wagon.

Feed-box.—Feed-box, sides of pine, 4 feet long; the bottom and ends of oak; sides 8 inches deep; box $7\frac{1}{2}$ inches wide at bottom, $10\frac{1}{2}$ inches wide at top, outside, well ironed with a band of hoop-iron around the top, one around each end, and three between the ends, with strong and suitable irons to fasten on the tongue when feeding.

Stay-chains.—Stay-chains to connect front axle to doubletree.

All the work to be neatly chamfered and rounded. The outside of body and feed-box to have three good coats of white lead, colored to a dark leaden blue; the inside to have two good coats of Venetian red paint; the running-gear and wheels to have three good coats of Venetian red and vermillion mixed half and half; all irons and chains to be painted black.

Each side of body of wagon to be lettered U. S., and numbered; all other parts to be stamped U. S.

The body and running-gear to be so put together that they can be taken apart for shipment.

An axle-wrench, tar-pot, and extra king-bolt, two extra nuts for axles, a lead-bar, with stretcher, chains, and singletrees attached, to be furnished with each wagon.

The links of tongue, stay, and feed-box chains to be of $\frac{1}{4}$-inch iron, lock-chains of $\frac{5}{16}$-inch iron, links not over $2\frac{1}{4}$ inches long.

Distance from the center of king-bolt hole to center of back axle 5 feet 9½ inches, and from center of king-bolt hole to the center of bolt in jaw of hind hounds 1 foot 10 inches; distance from the center of hind axle to center of bolt in jaw of hind hounds 3 feet 11½ inches, and from the center of king-bolt to center of slider 2 feet 2½ inches; distance between the inside of front and high standards 5 feet 8½ inches, to receive the body, which is 5 feet 8 inches from outside to outside of cleats of sides.

Weight of wagon, about 1,555 pounds, complete, for four horses or mules.

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, November, 22, 1878.

(5443, Q. M. G. O., 1878. Filed with 869, Q. M. G. O., 1876.)

Plate 1.

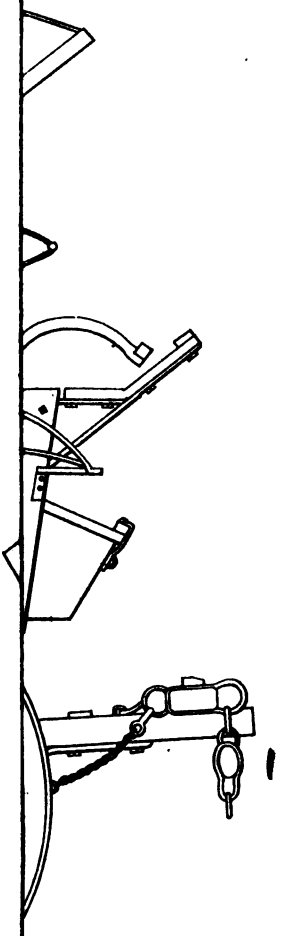


Plate. 2.

Plate. 4.

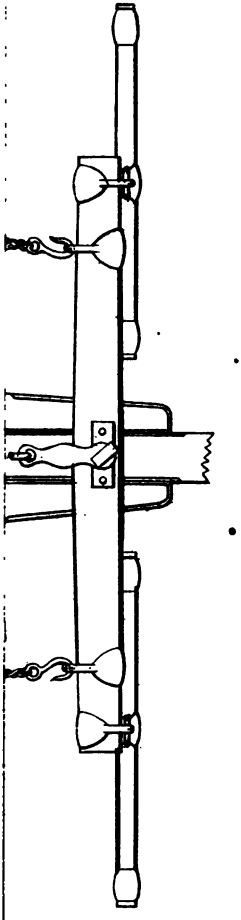
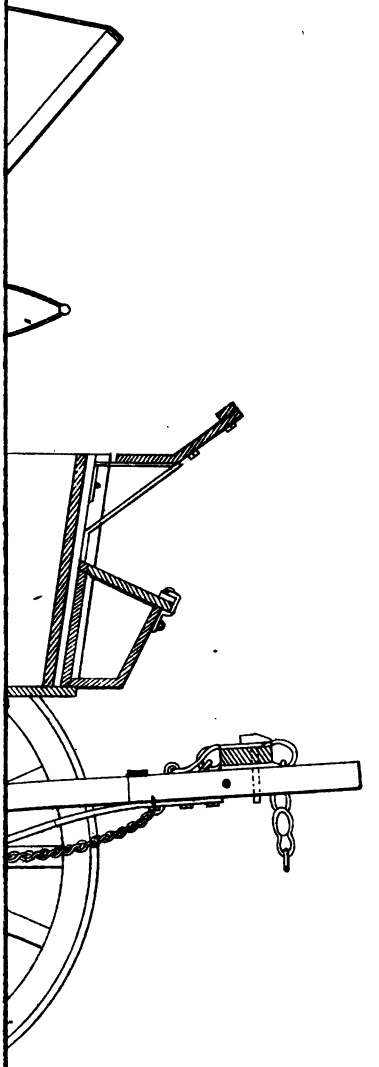


Plate 5.



Kervand. lith.

SPECIFICATIONS

FOR

DOUGHERTY SPRING WAGON.

Wheels.—Front wheels 3 feet 8 inches high, without tire; 14 spokes. Hind wheels 4 feet 2 inches high, without tire; 16 spokes.

Hubs.—Hubs best quality elm; front 6½ by 8½ inches, hind 6¾ by 8½ inches; point of hubs 4½ inches, butt 5¼ inches; mortise 1⅝ by ⅝ inch with ½-inch stagger; front edge of front mortise 3⅜ inches from face of hub.

Spokes.—Spokes second-growth hickory, 1¾ by 1⅛ inch at shoulder, 1½ by 1⅛ inch at felloe end; hub tenon 1¾ by ⅝ inch.

Rims.—Rims hickory, 1¾ inch deep, 1½ inch tread.

Bands.—Point and butt bands 2 by ⅛-inch iron, each projecting 1 inch from face of hub. Spoke bands in front, of ½-inch half-round iron, secured by three pins.

Tire.—Tire 1½ by ½ inch, secured by eight 2¼ by ¼-inch bolts in front, and ten in hind wheels; two felloe plates in each wheel.

Dish.—Dish of wheels: front ½ inch, hind ⅝ inch from front spoke.

Axles.—Axles best quality hammered iron, 1⅝ inch at shoulder, tapered to 1½ inch deep and widened to 1¾ inch at center; shoulder washer 3 inches diameter, ½ inch thick, forged solid with axle. Length 4 feet 4½ inches from out to out of collar.

Spindle.—Spindle 8 1/16 inches long from shoulder to nut; diameter at shoulder 1⅝ inch, tapering to 1 7/16 inch at nut

Boxes.—Boxes of best gray cast-iron, 8 inches long, inside diameter at each end 1/32 inch greater than spindle; 1⅜ inch thick full at point, 1⅝ inch full at butt, with wedge taper outside at butt. Double oil chamber inside, in center.

Nut.—Nut malleable, with flange 3 by ¼ inch, head 1½ inch square; threads eight to the inch.

Track.—Track 5 feet 2 inches from out to out.

Gather.—Gather, ⅜ inch front, ½ inch hind.

Axle-beds.—Axle beds best quality white oak; length 4 feet 3½ inches; front 1⅝ inch wide, 3 inches deep; hind 1⅝ inch wide, 2¼ inches deep—both tapering to 1⅝ inch square at ends; rounded for clips.

Plate.—Center plate on front bed, 1⅝ by ½ inch, 2 feet 10 inches extreme length, drawn out 7½ inches on each end to 1 by ⅛ inch, passing under inner axle-clip with turn up of ⅛ inch. Plate is fastened by two 7/16-inch bolts through futchels and axle, and one through bed and axle in center; two 1¾-inch No. 13 screws in each end of plate near axle-clip.

Clips.—Front axle secured to bed at each end by two ½-inch clips widened to 2 inches; inner one 8¾ inches, outer one 2¼ inches from shoulder washer. Outer clips have hooks for stay-chains on tie-plate; inner clips carry futchel braces. Hind axle secured to bed at each end by one ½-inch clip widened to 2 inches, placed 1¾ inch from shoulder washer. These clips carry perch braces.

Safety loop.—Safety loop of ⅝-inch round iron, bolted through a 6 by 3 by ⅛-inch plate on front of axle bed.

Head-block.—Head-block hickory, 1¾ inch wide on top, 1⅝ inch wide on bottom, and 3 inches deep; 4 feet 4½ inches long, tapered up at ends to 2 inches deep.

Plates.—Lower plate, extreme length 3 feet 5½ inches, drawn out 11¼ inches from each end to 1⅝ by ¼ inch, carried under spring-clips turned down ½ inch, secured by two ⅝-inch c. s. bolts through head-block at side perches; two ⅝-inch bolts through head-block 4½ inches from springs, and one 7/16-inch c. s. bolt in center. Top plate 1¾ by ¼ inch, extending outside of springs and turned up 1 inch, with corners rounded.

Coupling-lugs and tie.—Head-block and axle-bed center plates each have one lug welded on in center in front. The center perch-brace projects over the head-block in front with a corresponding lug on its end, also a tie on center bolt under axle, having a corresponding lug on its front end. Each lug has a ⅞-inch hole; center bolt-tie ¾ inch thick by 1¼ inch wide in front, and ⅝ inch thick where it takes the axle-bolt, turning up ½ inch behind.

King-bolt and attachments.—Through these four projecting lugs the king-bolt passes, which is drawn to ¾ inch at lower and upper lugs to allow play in front carriage; lower end shouldered for a ⅝-inch nut; two pieces of ⅞-inch gas-pipe (of the requisite length) placed between the projecting lugs through which the king-bolt also passes. One 3/16-inch plate, 6 by 3 inches, on front of head-block, in center, behind king-bolt ferrules, fastened with the two ⅝-inch bolts which take the side braces of middle perches.

Couple.—Couple 5 feet 11⅝ inches from center to center of axles; side perches framed 3 feet wide from out to out behind, and 18 inches from out to out in front.

Middle perch.—Middle perch hickory, 1½ inch wide by 1¾ inch deep behind, and 1½ inch wide by 2¼ inches deep in front; perches rounded one-eighth on each side at top.

Middle perch-plates and braces.—Middle perch bottom plate 1½ by ½ inch, passes under hind axle, taking ⅝-inch axle-bolt, and turns up behind ¾ inch, welded to lower head-block plate in front, and fastened to perch with seven ⅝-inch bolts, including safety-link eye-bolt; brace on top in

NOTE.—Where the letters "c. s." occur in specifications for plates, they mean "countersunk."

front ¾-inch oval iron, with king-bolt lug on front end, fastened by center bolt in head-block and safety-link eye-bolt, and extends back to next perch bolt. Two side plates on middle perch, ⅝-inch half-oval iron, ending in front with lugs, taking two bolts which pass through front plate of head-block; side plate to extend back 2 feet 2 inches, secured to perch with four ¼-inch iron rivets, (no heads.)

Side perches.—Side perches hickory, 1¼ inch square, framed in head-block ¼ inch from face, to allow perch-plates to pass under head-block plates.

Side perch-plates.—Side perch-plates 1¼ by ¼ inch, passing under axle behind, (taking one ⅜-inch axle bolt each,) turning up behind ¾ inch, secured to perches by eight $\frac{5}{16}$-inch bolts in each. Two draw-bolts on front ends of each side-perch 1 by ¼-inch iron, 8½ inches long, with ⅜-inch tangs and ⅛-inch plates, 3½ by 2 inches, under nuts in front, secured to each perch with two $\frac{5}{16}$-inch bolts.

Braces.—Two braces, ¾-inch oval iron, forming the tie, and extending from the clips on end of hind axle to a perch-bolt 22 inches from axle-bed, and thence to the next perch-bolt.

Futchels.—Futchels hickory, extreme length 4 feet; 1¾ inch deep to axle bed, thence thickness reduced to 1½ inch; 2¼ inches wide at axle bed in front, and tapered to 1½ inch wide at rear end; 1¾ inch wide at point, 2¾ inches wide at back of jaws; opening for tongue 3¼ inches at point, 2 inches at back of jaws; spread from out to out behind 12 inches; distance from axle bed to point of jaws 2 feet 3¼ inches.

Plates.—Jaws 18 inches long, plated with 1¾ by ⅛-inch iron, secured by two 1-inch No. 11 screws in each futchel.

Futchel braces.—Futchel braces 1½ by ½ inch, drawn to ⅜ inch at ends and extending whole length, secured with five ⅜-inch bolts in each futchel —two in front, two behind, and one in axle. Two braces of ⅝-inch oval iron, extending from (and forming the ties on) center clips of front axle to a ⅜-inch bolt on side of futchel, 11 inches from point; thence to another ⅜-inch bolt, 3 inches from point, taking tongue-bolt 7½ inches from point of jaw.

Plate.—Bottom plate across front of futchels, 1¼ by ¼ inch, secured by two ⅜-inch bolts.

Check-plates.—Two check-plates, 1½ by ¼-inch iron, 4 inches long, bolted to and screwed on under side of futchels behind axle bed, turned down 1 inch at axle bed.

Slider.—Slider, oak, 2 feet 6 inches long, 1½ inch wide, 2 inches deep; curved 2 inches, and tapered up at ends to 1 inch thick; sunk on futchels ¼ inch.

Plate.—Slider plate 1½ by ½ inch, drawn to ¼ inch at ends, extending over ends of slider 2 inches, slightly bent down, secured by two ⅜-inch bolts through futchel, and one $\frac{5}{16}$-inch rivet 3 inches from each side of center, and one $\frac{5}{16}$-inch rivet 3 inches from each end of bar.

Rub-plate.—Rub-plate 1½ by ¼ inch steel, 13 inches long on perch, secured by eye-bolt and first perch-bolt.

Tongue.—Tongue hickory, 10 feet 6 inches long, 3¼ inches at point of futchels, 2 inches at back of jaws, 2 inches deep, 1⅝ by 1⅞ inch at front end.

Clevis.—Clevis and goose-neck forged solid; size of goose-neck at its junction with clevis ⅞ inch round, curved backward 6 inches, and tapering gradually to ⅜ inch at point; side plates of clevis ½ inch thick by 1¼ inch wide at front, extending back 10 inches, and drawn to ⅛ inch at back end, secured to pole by two $\frac{5}{16}$-inch bolts.

Strap loops.—1¾-inch strap loops, of ⅜-inch round iron, furnished with thimbles; loops welded into lugs formed on clevis plates near front end.

Chains.—Tongue chains $\frac{5}{16}$-inch round iron, thirteen straight links to the foot, with two ⅜-inch rings on each; diameter of rings 1¾ inch inside; chains 2 feet long, including rings.

Stay-chains and hooks.—Stay-chains of $\frac{5}{16}$-inch iron, 21 inches long, 13 straight links to the foot, 3-inch straight link at each end, fastened by a link welded into doubletree clip.

Doubletree block.—Doubletree block hickory, 1⅞ inch deep, notched ⅝ inch to allow tongue to rise; the block is placed 2½ inches from point of futchels, and secured by two ⅜-inch bolts through plate and futchels; a ½-inch doubletree bolt, square head, set into block below, with nut on top, for removal of doubletree.

Plate.—Plate on top same size and thickness as doubletree plate.

Doubletree.—Doubletree hickory, 4 feet 2 inches long, 3¼ by 1½ inch in center, 2½ by 1¼ inch at ends.

Plates.—Top plate 11 inches long, 1¼ by ¼ inch, with center boss ⅝ inch thick; bottom plate $\frac{3}{16}$ inch thick, 3¼ inches wide, 6¾ inches long, fastened with two $\frac{5}{16}$-inch bolts through top plate.

Clips.—End clips 1½ by ¼ inch, top end turned down, bottom end extending, forming eye for stay-chain; bow of clip ⅝ inch round in center.

Brace.—Doubletree brace ¾-inch oval iron, welded to cross-plate of 1¼ by ⅜-inch iron, bolted 2 inches from back of jaws of futchels with two ⅜-inch bolts, with a boss on front end ⅝ inch deep.

Singletrees.—Singletrees hickory, 2 feet 9½ inches long, greatest diameter 2⅜ inches; 1¼-inch ferrules on ends, with ½-inch eye-bolts 3½ inches long, and ⅜-inch rings 1¾ inch inside diameter; center clip forged and attached to doubletree with ⅝-inch welded rings 1¾ inch diameter in center.

Plates.—Oval wear plates screwed on under side of singletrees.

Lead bars.—Lead bar oval, of hickory, 3 feet 3½ inches long, greatest diameter 2½ inches, at ends 1¾ inch.

Singletrees of hickory, oval, 2 feet 9 inches long, greatest diameter 2⅛ inches, 1⅛-inch round ferrules on ends; ⅜-inch eye-bolts, 3½ inches long, with $\frac{5}{16}$-inch rings 1¾ inch inside diameter; forged clips on center of

singletrees and on lead bars; ½-inch welded rings at ends of bar 1½ inch inside diameter; middle ring on bar $\frac{9}{16}$ inch, 1⅞ inch inside diameter.

Springs.—Four elliptic springs, best quality No. 3 English oil-tempered steel; no bolt holes on lower plates except center bolt.

Front.—Front springs, five-leaf, 1¾ inch wide, 37 inches long from center to center of end bolts; arched 11½ inches from out to out.

Hind.—Hind springs, six-leaf, 2 inches wide, 38 inches long from center to center of end bolts; arched 12 inches from out to out.

Attachment.—Each spring bolted to body with two ⅝-inch bolts and clipped to axle bed and head-block with two $\frac{7}{16}$-inch round clips, having ⅞ by ½-inch ties, rounded in center. Springs to be placed on gearing so as to come flush with outside of body sills.

Blocks.—Lower spring-block of iron, ⅝ inch thick at center, tapering to ends, and 7½ inches long, bolted to spring-bolt, with lugs ½ inch deep to take axle.

Top spring-blocks of hickory, 2 inches deep behind and 1 inch deep in front measurement in center; 7½ inches long, with chamfered corners.

Brake.—Transverse bar, 1-inch round iron, ends flattened to 1⅛ by ¾ inch, dropped 7½ inches from center of bar to center of block, with collars welded on outside of hangers.

Rub-block.—Rub-blocks of hickory, 6 inches long, 2½ inches wide, 2¼ inches thick, clamped by plates of 1½ by ¼-inch iron bent at right angles and let in flush on sides of block, and secured with ⅜-inch bolt to hole in lower arm of transverse bar; to have one $\frac{5}{16}$-bolt through block and plates.

Levers.—Bar lever 1¼ by ½ inch, 9½ inches long from bar to rod-bolt; front lever 1½ by ½ inch, 20 inches long, finished, slightly curved out to prevent striking the bed; foot plates 5 inches long, (from center of lower hole to center of rod-bolt 4 inches;) lower end of lever bent forward from rod-bolt 2½ inches; horizontal rod $\frac{9}{16}$-inch round iron, with two forks to take levers; $\frac{7}{16}$-inch square-headed bolts through each fork.

Bolt-plate.—Lower end of front lever to be attached to a ¾-inch bolt-plate which takes three spring-bolts on under side of upper main leaf; bolt end swedged for ⅝-inch nut, and bent outward at right angles, with collar 1¾ inch from spring.

Hangers.—(For Brake Hangers see Body.)

Body.—Body 6 feet 10 inches long, 3 feet 6 inches wide from out to out; height from under side of body sill at corners to top of roof 4 feet 2½ inches.

Sills.—Bottom and end sills of white ash, 2¼ inches wide by 1½ inch deep, half-mortised, glued and screwed at corners.

Rockers.—Side rockers 1⅛ inch thick, white ash, 4⅞ inches deep in center and 3⅜ inches deep at ends; end rockers 3⅜ by 1 inch, glued, and screwed to sills with ten 2½-inch No. 20 screws in each side, and six in each end rocker; side and end rockers to be rabbeted ⅝ by ⅞ inch.

Bottom boards.—Bottom boards $\frac{5}{8}$-inch pine, tongued and grooved, nailed on side rockers, and secured by two $1\frac{1}{8}$ by $\frac{1}{8}$-inch iron straps, fastened with twelve $1\frac{1}{4}$-inch No. 11 screws in each strap.

Center rail.—Center rail oak, $1\frac{1}{2}$ inch wide, $\frac{5}{8}$ inch thick, fastened with twelve 1-inch No. 9 screws through bottom boards, and secured to end rockers with two $2\frac{1}{4}$-inch No. 13 screws.

Pillars.—Four pillars, of hickory, on each side, $1\frac{1}{16}$ inch thick on face, $1\frac{1}{4}$ inch wide below, and 1 inch square at top; distance between back pillar and rear center $27\frac{1}{4}$ inches in the clear; center pillars 22 inches apart, others at corners; all half-mortised in sills and let in full size on seat and end rails.

Studs.—Two studs on each side from sills to seat rails, between first and second and third and fourth pillars, and one in center of front and back panel, all $1\frac{1}{4}$ inch square and gained into sill and seat rail; distance from front pillar to rear edge of first stud $14\frac{1}{4}$ inches.

Seat rail.—Seat rail oak, 1 by $2\frac{1}{4}$ inches; $\frac{1}{4}$ inch above top of lower panel, half-mortised in end rails.

End rails.—End rails of oak, $2\frac{3}{4}$ by 1 inch, secured to pillars with one 1-inch No. 10 screw in each pillar.

Arm rail.—Arm rail of hickory, $1\frac{1}{8}$ inch deep, $\frac{7}{8}$ inch thick, notched $\frac{1}{2}$ inch, and screwed to pillars on outside with 1-inch No. 10 screws 8 inches from top of top panel, and extending from back pillar to middle pillar, and across the doors only.

Roof rails.—Side roof rails ash, 1 by $1\frac{3}{4}$ inch at ends, $2\frac{1}{2}$ inches deep in center, $\frac{3}{4}$-inch arch in the length of top.

Back and front roof rails ash, 1 by $1\frac{3}{4}$ inch, arched 3 inches; roof rails sunk for pillars $\frac{1}{2}$ inch, and pillars shouldered $\frac{1}{8}$ inch strong.

Ribs.—Five ribs, of ash, across top, 1 inch wide, $\frac{3}{4}$ inch deep, arched as end roof rails, covered with $\frac{1}{4}$-inch pine boards securely nailed on.

Panels.—Lower panels of poplar, $\frac{1}{2}$ inch thick by $9\frac{1}{2}$ inches deep, securely screwed and glued to outside of bottom sills and pillars, (panels extending across the doors making a continuous finish.)

Belt piece of ash, $\frac{3}{4}$ inch thick, $2\frac{1}{4}$ inches wide, rabbeted on lower edge to cover lower panel $\frac{1}{4}$ inch; corners of laps rounded for finish, secured to each pillar with two $1\frac{1}{4}$-inch No. 11 screws.

Top panels.—Top panels poplar, shows 4 inches wide, let into belt piece same as lower panel.

Molding.—Molding $\frac{1}{2}$ inch wide, $\frac{1}{4}$ inch thick, on top and outer edge of upper panel for finish; sides, front end, and doors finished with a $\frac{3}{8}$ by $\frac{1}{4}$-inch molding $\frac{3}{4}$ inch from the lower edge of lower panel and extending up center of each pillar to belt piece.

Doors.—Doors 22 inches wide, 3 feet 4 inches high; pillars to match body pillars; top piece $2\frac{1}{4}$ by 1 inch; bottom piece is belt piece, as before explained. (See Panels.)

Fastenings.—Doors to have one 1½-inch No. 2 wrought carriage hinge and one 2-inch No. 2 carriage hinge each; one 3½-inch straight slot spring-latch with plated double handle. Doors to open from front to rear.

Door-stop.—Doors to have a metallic stop at top, 1 inch wide, projecting ½ inch, with corners rounded, secured to pillar inside by one 1-inch No. 9 screw.

Weather strip.—Weather strip over door, of ash, 25 inches long, 1¼ inch wide, 1⅝ inch thick, beveled to ⅜ inch on edge; end chamfered; strips secured to side roof rails with two 1-inch No. 9 and two ¾-inch No. 8 screws.

Guide pieces.—Four guide pieces, of poplar, ⅛ inch thick, flush with pillars, placed on top of seat rails as seat guides, between first and second pillars and between third pillar and front of back seat; to be properly screwed to seat rails.

Back panel.—Back panel ½-inch poplar, 2 feet 7 inches high; top piece ash, ¾ inch thick, 3 inches wide at ends, arched to 4 inches in center, having its lower edge rabbeted ¼ inch for panel; panel secured to back end rail and to an additional rail half way to top piece, secured to pillars with seven 1-inch No. 10 screws in each pillar. Top piece secured to pillars with two 1¼-inch No. 11 screws in each end.

Straps.—Five 1 by ⅛-inch iron straps on back of body, 6½ inches apart, extending from bottom sill to top rail, and secured to sill, end rail, and cross rails with 1-inch No. 10 screws, and to back panel with two ⅝-inch No. 8 screws in each strap.

Driver's box.—Partition board, forming back of driver's box, to be of ¾-inch pine, secured to rear edge of stud with three 1¼-inch No. 11 screws in each stud; cut at ends on top to allow seat cleats to slide over.

Whip-socket.—Whip-socket, of approved pattern, secured at front end of panel, on right side.

Cleats.—Two cleats, full width of board, 1¼ by 1 inch, placed 5 inches from each end, secured with three 1½-inch No. 12 screws.

Foot-board.—Foot-board ash, 11 inches wide, 2 feet 11 inches long; heel piece ash, 5½ inches wide on top, corners rounded, flared 5½ inches from level of foot-board.

Two hangers, 1¼ by ⅜-inch iron, to drop 4 inches below and 1 inch in front of body sill, fastened with ⅜-inch bolts in both sill and rocker; to extend under foot-board and heel piece, and secured to each with two $\frac{5}{16}$-inch bolts in each hanger.

Brace.—Two ½-inch braces, 16½ inches long, to extend from ⅜-inch bolts in foot-board to corner plate on top end rail, passing through from bottom side, with nut on top.

Corner plates.—Two corner plates on inside of pillar and front end rail, of 1 by ⅜-inch iron, each side 7 inches long, drawn thin at ends, and secured

to pillar with one ¼-inch bolt and two ¾-inch No. 11 screws, and to end rail with three 1-inch No. 12 screws; to have eyes welded on near pillar and depressed to angle of foot-board brace.

Two corner plates at top in rear, of 1 by ¼-inch iron, to extend 6 inches on side and back, drawn thin at ends and carried down 4 inches on back pillar, bent outward, with eye to receive boot-chain hooks; plates secured with three ¾-inch No. 12 screws in each end; eye-plate secured with one ¼-inch bolt near eye and one 1-inch No. 12 screw. Two plates, ⅞ by ⅛ inch, at inside top corner in front, rounded angle, secured by rivets in each end.

Back corner-post plates.—Plate on front of each back pillar, 1 by ¼ inch, 12½ inches long, drawn thin at ends, to extend 2½ inches below seat-stay bolt, the eye-bolt of boot frame passing through it 2½ inches above the brace-bolt, secured with two ¾-inch No. 10 screws in its upper and one in its lower end.

Rub-irons.—One rub-iron on each side of body sill, 6 inches long, with edge ⅜ by ⅝ inch deep; one rub-iron on each side on rocker, 6 inches long, outside flange 1¾ inch deep in center, extending 1 inch under rocker; corners rounded; irons to be malleable. Each plate secured by four 1¼-inch No. 11 screws.

Brake hangers.—Brake hangers of hickory, 7 inches long at top, 5 inches at bottom, 5 inches deep, 1½ inch thick; caps 1½ by ⅜-inch iron; hangers chamfered and secured to body sill with two ⅜-inch bolts and to rockers with one ⅜-inch bolt, the latter taking back brace of steps.

Check-straps.—One malleable strap loop on front bolt of each brake hanger, to take 1¼-inch check-straps, which pass around side perches.

Steps.—One step on sill on each side, 3/16-inch iron, 7½ inches long, 5 inches wide, extending 5 inches from panel, (distance from center of step to center of front pillar at door, 7 inches,) bolted with one 5/16-inch bolt and one ⅜-inch bolt, the latter taking front brace of hanging step; one wrought hanger step on each side, with foot plate 4½ inches square, with corners removed; the shank of steps to be 1-inch octagon where ¾-inch oval braces separate, step to drop 13 inches and project outward 10 inches and forward 2 inches; side braces to spread 10½ inches; back brace to take bolt in bottom; back side brace takes ⅜-inch bolt through center of brake hangers; front brace to take bolt in step on sill.

Seats.—Seat boards pine, ⅞-inch thick; front 14 inches wide, with two cleats, ⅞ by 1¾ inch, attached with three 1½-inch No. 12 screws; back of seat 16 inches wide, same thickness, with two cleats same size as described.

Front seat to come flush with rear edge of pillars. Two 6-inch light wrought strap-hinges on each seat to attach seat to back; hinges secured with two ¼-inch rivets near joint, and six ¾-inch No. 9 screws in each.

Middle seat to be a duplicate of front.

Back seat one board, 18 inches wide, notched for pillars; cleats to be 2¼ inches wide, ⅞ inch thick in front, tapering to ¼ inch thick at back end, secured same as cleats for other seats.

Seat straps.—Two straps of harness leather, 1¼ inch wide, lapped over at ends 4 inches, and attached to cleats with three ¾-inch No. 10 screws, with washers in each end of strap; buckle and loop in center to hold backs of seats in position when required; straps on front seat to be let in flush with cleats.

Back stays.—To have two stays of ⅜-inch round iron, with eye on each end; upper end bolted to back pillars 3½ inches from top of back panel, and extending to within 1 inch of front edge of hind seat, taking a ¼-inch rod, which passes through bottom sill, with nut below.

Boot frame.—A mortised boot frame of hickory, 2 feet 6 inches long, 3 feet 6 inches wide; side rails 1¾ by ⅞ inch; front and back rails 1¾ inch wide, 1⅜ inch deep; middle rail, fore and aft, ⅞ inch deep by 1¼ inch wide; frame to be fastened to body by three hinges of 1 by ¼-inch iron; back hinge plates, 8 inches long, bolted to pillars and center stud with two $\frac{5}{16}$-inch bolts each; frame plates to extend whole length, forming a 4-inch back corner plate, and secured with five $\frac{5}{16}$-inch bolts and one $\frac{5}{16}$-inch eye-bolt in each; center hinge plate, 1 by ¼-inch iron, 8 inches long, secured with two $\frac{5}{16}$-inch bolts.

A "T" plate, 1 by ¼-inch iron, on back and middle rails; top 10 inches long, upright 6 inches long, secured by three $\frac{5}{16}$-inch bolts.

Hinge rod and top-frame rod ⅜-inch round iron; two upright rods, ½-inch round iron, at corners of boot frame in front, with lower end bent back to take a $\frac{5}{16}$-inch bolt through side rail and extending up parallel with body to eye-bolt, there flattened with eye to take top rod; to have hole 2 inches below top rod for a 10 by 3½-inch parallel rod, which is hooked into chains to form top end of boot.

Bottom boards of boot frame ½-inch poplar, secured with six 1-inch No. 9 screws in each side and middle rails; a strap of 1 by ⅛-inch iron over screw-heads taking hinge-plate bolts.

Boot-chains.—Two ¼-inch chains, 14 twisted links to the foot, extending from eye in top corner plates to eye-bolt in rear corner of frame, to which it is welded; with ⅜-inch hooks in upper end.

Bonnet.—Bonnet 12 inches wide, extending down pillar 16 inches; frame ½-inch oval iron, bolted to pillars, arched as roof; offset 2 inches at ends; two ¼-inch hooks, 9½ inches long, 5 inches from roof rail, and secured to pillars with 1-inch No. 11 screws attached to eye, riveted in frame 2¼ inches from upper corner.

Trimming—Seats.—To be trimmed in Concord style. Seats and back covered, and all edges welted with best quality russet-bag leather, and stuffed

frrm 3 inches deep with No. 1 gray curled hair; one lap 3 inches wide on each side of seat and back, each lap secured with not less than sixteen 1-inch tufting nails; welting to be $\frac{5}{8}$ inch wide, except on ends of middle and back of front seats, where it will be $1\frac{5}{8}$ inch wide; welting to be applied with 10-ounce lining nails spaced 2 inches apart.

Back panel.—Inside of back panel canvassed and trimmed with same material as seats; top lap to be $2\frac{1}{2}$ inches wide, second lap 3 inches, third lap $8\frac{1}{2}$ inches, 4 inches below this flat down; lap secured same as on seats.

Top.—Top covered with No. 8 white duck tacked over top rails; tack heads covered with $\frac{1}{4}$ by $\frac{1}{2}$-inch poplar molding.

Head lining.—Head lining, black drill, secured on each rib with three $\frac{1}{2}$-inch tufting nails, finished all around with red fringe, with white heading, secured with best quality Swede-iron round-head tacks spaced 2 inches apart.

Curtains.—Curtains of No. 5 white sail-duck, fastened to curtain strips; corners on pillars secured with one $\frac{3}{4}$-inch No. 8 round-head screw in each; curtain fastened to pillars with four No. 10 brass keys and staples, and to top panel with three brass keys and staples; key straps of harness leather, $\frac{1}{2}$ inch wide, 4 inches long, riveted to curtain and key with No. 12 copper rivets; curtain fitted with No. 3 brass grommets; back curtain takes the two staples on sides of corner pillars; back and door curtains to have chafe pieces of harness leather sewed inside and outside of each at eye-bolts and door handles; back curtain to lap over boot cover 3 inches, and be secured to top piece of back panel with two staples and keys; bonnet to be trimmed with same material as curtains; trimming secured to roof rail with twenty-four best quality 12-ounce Swede-iron tacks; tack heads covered with top molding. Edges of curtains, boot cover, and aprons, where not selvage, to have $\frac{5}{8}$-inch hem.

Curtain strips.—Curtain strips of ash, $\frac{7}{8}$ by $\frac{1}{2}$ inch, secured to under side of roof rails and top piece of doors between pillars with three 1-inch No. 10 screws in door pieces, four same size in other side strips, and five same size in back strip.

Apron, or front curtain.—Apron to be 45 inches square, secured to screw-knobs on inside of pillars and to three knobs on under side of heel piece; to have $1\frac{1}{8}$-inch straps of harness leather to take the knobs; straps riveted to apron with two copper rivets; apron to have line-hole 8 inches long, 10 inches from top and 6 inches from off side, bound with harness leather.

Roll-up straps.—$1\frac{1}{8}$-inch roll-up straps of harness leather, 13 inches long, with knobs; two on each side curtain and bonnet and three on back curtain; secured to top roof rail with one $\frac{3}{4}$-inch No. 8 screw in each.

Gun-straps.—Two gun-straps, of harness leather, 8 inches long, $1\frac{1}{8}$

inch wide, with knobs on each center pillar at top inside; secured with two ¾-inch No. 10 screws in each; looping knobs to have long shank.

Boot cover.—Boot cover and sides of No. 5 sail-duck; cover 56 inches long, 56 inches wide, cut at lateral rod so as to lap over ends from small top rod downward, with 1½-inch lap for top cross-rods; lower corners rounded; chafe leathers at lateral rod, outside and inside.

Straps.—Two 1¼-inch straps, of harness leather, 18 inches long, on each side 11 inches apart, the upper one 21½ inches from top, each secured with two copper rivets 7 inches from edge of cover, buckled to two billets riveted on side of boot in same manner. Two 1¼-inch straps, of harness leather, 2 feet long, secured with two copper rivets to boot cover 12 inches from lower edge and 2 feet 1 inch apart; these to buckle to two billets secured to lower side of back rail of boot frame with two ¼-inch rivets in each, the buckle and loop only projecting; sides of boot stitched to upright rods and chains and nailed to end of frame; heads of nails covered with 1 by ¼-inch ash molding.

Painting.—Body to have one coat of filling; body and running-gear to have one good coat of lead-color priming; all to be painted black with two coats lead and color, and one coat color and varnish; body plain; gearing to have ⅜-inch stripes of dark green; all to be finished with one good coat of coach varnish; to be thoroughly rubbed off between each coat; inside to have two coats of drab color, except back of seats, which will be finished color of bed.

Curtains, bonnet, boot cover, and sides to have one coat yellow ochre in oil; top to be black.

Brands.—To have letters "U. S.," Doric style, 3 inches high, in green, color of striping, in center of lower door panel on each side. Maker's brand to be placed inside of back board of driver's box.

Material.—Woodwork, unless otherwise stated, to be first quality forest growth; iron, unless otherwise stated, to be best quality stonecoal; all clips to be of charcoal iron; all bolts to be Norway iron; leather to be best quality oak-tanned; all buckles to be of the japanned, malleable, barrel, roller pattern; all screws to be steel.

Workmanship and finish.—Spokes and wheel boxes to be well wedged; all the parts to be neatly edged, chamfered, or rounded; tenons put together with white lead; all welds to be made smooth and strong; straps to be neatly punched and creased; washers under all nuts coming in contact with woodwork.

The wagons are to be so constructed that the several parts will be interchangeable, requiring no numbering or arranging for putting together, and the work in all its parts faithfully executed in the best workmanlike manner.

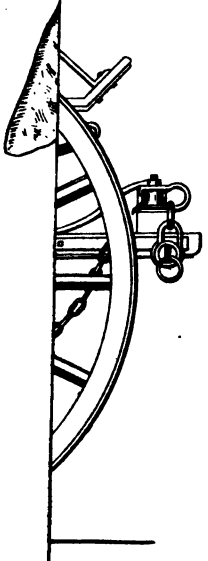
Each wagon to be furnished with one 12-inch Coe's genuine black monkey-wrench.

Inspection.—The work shall be inspected from time to time, as it progresses, by an officer or agent of the Quartermaster's Department, and none of it shall be painted until it shall have been inspected and approved by said officer or agent authorized to inspect it.

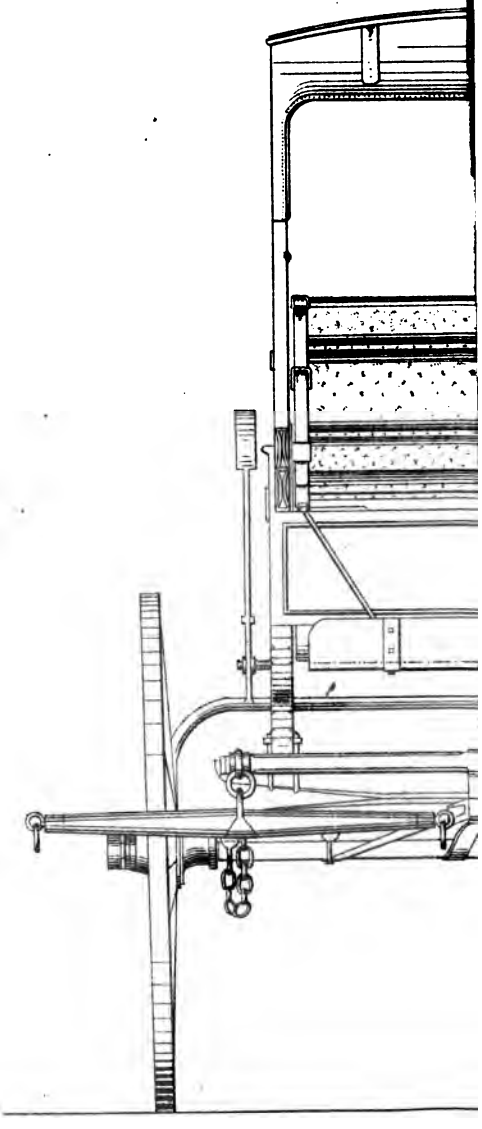
WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, August 15, 1878.

(4016, Q. M. G. O., 1878.)

Plate 1.



Dougherty S

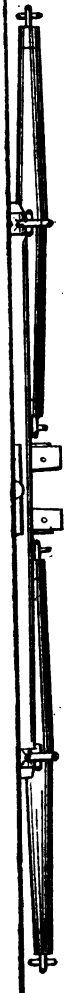


Fron

12 9 6 3 0 1

Plate 3.

Plate 4.



SPECIFICATIONS

FOR

AMBULANCE WAGON FOR U. S. ARMY USE, COMPLETE,

(Including two [2] Hand Stretchers.)

PREPARED BY BOARD OF OFFICERS CONVENED IN WASHINGTON, D. C., BY PAR. 4, S. O. NO. 44, WAR DEPARTMENT, A. G. O., DATED MARCH 16, 1875, (ORGANIZATION MODIFIED BY SUBSEQUENT ORDERS,) AND APPROVED BY THE SECRETARY OF WAR OCTOBER 31, 1877, AS SUBSEQUENTLY MODIFIED AND ALTERED AFTER TRIAL IN ACTUAL USE, AND APPROVED AND ADOPTED BY THE SECRETARY OF WAR MAY 25, 1881.

Body.

Main sills.—Main sills, two, 11 feet 1½ inch extreme length, (including 11½ inches projection for toe-board, and 1 inch finish outside of tail-gate,) 1⅞ inch wide, 2½ inches deep, each sill to have on inside, 4 inches from back end, an iron strap loop into which is fastened a leather loop 6½ inches long, ⅞ inch wide, and rounded to pass under handle of stretcher.

Cross-bars.—Cross-bars, three, mortised 1½ inch into main sill. The front bar to be 2½ inches wide, 2½ inches deep, and framed into main sill 11½ inches from the front end. The back bar, 3 inches wide, 1⅛ inch deep, to be framed into main sill 3 feet 4¼ inches from the front bar, out to out. The center bar, 3 inches by 1⅛ inch, framed into main sill equally distant between front and back bars, and flush on bottom.

Bottom sills.—Bottom sills, two, 6 feet 11½ inches long, 3 inches wide, 1⅛ inch deep, mortised to receive seven studs each; the studs, 1 inch by 1¼ inch, and 9⅞ inches long between the shoulders, with $\frac{7}{16}$ inch by width of stud tenons on upper end and $\frac{7}{16}$ inch by width of stud tenons on lower end, so as give a drop of 11 inches below bottom of main sill.

Cross-bars.—Cross-bars framed into lower sill, five. The front bar to have a ½-inch curve toward the back, and an iron plate ¾ inch wide and ⅛ inch thick, screwed on front edge its full length, the screws to be ¾-inch No. 10, and to be set 4 inches apart. The front bar mortised to receive four studs of same dimensions as those described for sides, passing through upper back bar, forming front of drop or lower part of body; to be 3 inches wide, 1⅛ inch deep. The back bar of lower sill, 2½ inches deep, 1⅞ inch wide, to project 4½ inches on either side of the body, and be mortised to receive ends of lower sills. The three other bars to be framed into lower sill equal distance apart, as in drawings. Width of body, 4 feet 2¾ inches out to out, and 3 feet 11 inches in the cleat, inside.

Panels.—Side panels of lower part of body to be of best yellow poplar, $9\frac{7}{8}$ inches deep, 6 feet $10\frac{3}{4}$ inches long, $\frac{1}{2}$ inch thick, screwed to inside of studs.

Tail gate.—The length to be same as the inside width of the body, and to comprise an oak frame with upper and lower rails 1 inch deep and $1\frac{7}{8}$ inch wide, into which are mortised four studs 1 inch by $1\frac{1}{4}$ inch. The lower rail to rest on the top of the back bar, upper rail to be level with top of main sill. Panel $\frac{1}{2}$ inch thick, screwed on inside of studs.

Floor.—Bottom of body to be of best white pine, $\frac{3}{4}$ inch thick.

Upper sides.—Upper sides of body to have top rail 10 feet 2 inches long, (including 1 inch projection for finish of front end,) and bottom rail 10 feet 1 inch long, both rails, $1\frac{7}{8}$ inch wide and 1 inch deep, and mortised for 9 studs. The center of first stud to be $5\frac{1}{4}$ inches from front end of body, and the spaces between the studs to be as follows, measuring from center to center: from first to second stud, $13\frac{1}{2}$ inches; second to third stud, $13\frac{1}{2}$ inches; third to fourth stud, $13\frac{1}{2}$ inches; fourth to fifth stud, $14\frac{1}{2}$ inches; fifth to sixth stud, $14\frac{1}{2}$ inches; sixth to seventh stud, $10\frac{1}{4}$ inches; seventh to eighth stud, $14\frac{1}{2}$ inches; and eighth to ninth, $14\frac{1}{2}$ inches; and the center of ninth stud to be $7\frac{1}{4}$ inches from back end of body. The studs to be 1 inch by $1\frac{1}{4}$ inch, 12 inches high between shoulders, and framed $\frac{1}{4}$ inch from inside of rails. The panels to be of best yellow poplar, $\frac{1}{2}$ inch thick, and screwed to outside of studs. These sides to be fastened to top of main sill by six hinges each, which are screwed to the inside of the first, third, fourth, seventh, eighth, and eleventh studs, counting from the front of the body. Lower part of hinge to be screwed to the main sills. The upper part of these hinges to be 8 inches long, $1\frac{1}{4}$ inch wide, $\frac{1}{4}$ inch thick, and the lower end $2\frac{1}{4}$ inches deep, 3 inches long, and $\frac{1}{4}$ inch thick to receive hooks of cross-irons on seat bottoms, each part countersunk for 5 screws. Hinges to be let in flush with inside of the body. Furthermore, each side frame to have on under side of bottom rail two iron stub-pins, $\frac{1}{2}$ inch diameter and projecting $\frac{1}{2}$ inch, secured so as to enter a hole in a stub-plate, which will be let into and secured to the main sill.

Front board.—Front board of same dimensions as tail gate and of same material, to form front of box under driver's seat. At either end of upper rails of tail gate and front board to be iron loops, $1\frac{1}{2}$ inch wide, $\frac{3}{16}$ inch thick, 10 inches long on top and 5 inches long on bottom, which will be riveted to these rails, and be large enough to receive the projecting ends of the main sills at the tail gate and the upper rails at the front board.

Front board straps.—The front board will be fastened to the front bar by four iron straps, screwed to the four studs, the lower ends to be curved forward and slide into four staples secured to front bar.

Tail-gate hinges.—The tail gate is hinged to back bar by four iron straps,

one to each of the four studs, to be 9½ inches long, 1⅛ inch wide, and ¼ inch thick, each ending below in an eye, to form a half hinge, the other half being adjacent eyes which will be bolted to the back bar. Through these eight eyes will be passed a continuous ½-inch iron rod having a bolt-head at one end a nut at the other end.

Side stays.—The sides of the body will be further held upright by a stay-rod at the rear end on each side. This stay will be of 1-inch round iron at the bottom, tapering to ¾ inch at top, there flattened, and terminating in a T, the round continuing to top of T, which will be firmly bolted to the main sill. The lower end to have a shoulder 1¼ inch diameter, to rest on back cross-bar, and passing through it is reduced to ½ inch and secured by washer and nut.

The driver's seat and box.—The front is formed by the front board of the body. The top or seat-board is of pine, 1 inch longer than the inside width of the body, the ends resting on the upper rails and the front edge resting on the front of the body. This board to be 1 inch thick and 18 inches wide, of pine. This seat-board will be hinged to the back board, which will be of pine, 14 inches wide, ⅞ inch thick, and of length same as inside width of body. This board will slip down between two cleats at each end, fastened by screws to upper and lower rail, parallel and 1 inch apart. Lazy-back for driver's seat to be of best ash, 5 inches wide, ¾ inch thick, the ends to be fitted with two iron hooks at each end, adjusted to drop into iron sockets fastened to the front bow on each side; top of lazy-back to be 14 inches above seat.

Interior of driver's box.—Interior of driver's box to be divided into two unequal parts by a ¾-inch partition of pine sliding between cleats on front and back of box, 15 inches from left side of body. A keg to be made of oak, 16 inches long, 10 inches in diameter at center and 9 inches at either end, bound with eight (8) brass hoops ½ inch wide, and supported by neat rests and steadied by cleats screwed on the inside of the top. A circular aperture to be made in left upper panel near the front, through which the outer end of the keg will project one inch. A substantial nickel-plated screw-faucet to be screwed into a ⅞-inch circular hole in the outer end of keg near the bottom, and to project 4 inches outside of end of keg, and to be protected by an iron curved strap screwed into lower rail, as shown in drawing attached. The rests to be arranged so as to prevent breakage or straining panel.

Toe-board.—Toe-board of best oak, 1 inch thick, 10½ inches wide, 4 feet 2¾ inches long, to be let in flush on top of main sills, secured by screw to center cross-bar and to sills by three bolts in each end, the main sills to be slightly beveled at that point where the rear side of the toe-board is let into it, and the toe-board to have a corresponding beveled edge. Toe-board to be set 1 inch from front bar, and to have a toe-rail of ⅞-inch half-round iron

projecting 4 inches and raised 3½ inches, having four stay-bars carried across and secured to toe-board by three bolts in each stay. The bolts in the two end stays to be carried through the main sills, and will have a roughened step 4 inches wide by $\frac{3}{16}$ inch thick welded on the stay-bar. The roughened step is not to project beyond the sides of main sills, but to be flush with them. The flat side of the toe-rail will also be roughened.

Partition.—A partition to be made in the body, forming an extension of and above the lower front panel, by a pine board 14 inches wide and $\frac{7}{8}$ inch thick, held in place by two parallel cleats on each side of each end, to be 1 inch apart and screwed to top and bottom rail.

Inside seats.—Inside seats to be of white pine, ¾ inch thick, two on each side, 3 feet 2 inches long, 14 inches wide; to be held in position by two leg-irons on front of each seat, which are riveted to a projection of strap-iron, which is fastened across the width of the seats 6 inches from either end to center; bottom of leg-iron to enter hole in plate screwed to bottom of body. Leg-irons ½ inch diameter. Bottom part of seat to be secured to main sill by two dovetail hooks on each seat at ends of cross-irons; these hooks to enter angle-plates, which last to be let into and screwed to main sills, as shown by drawings. Cross-irons to have an additional dovetail hook in the middle of the seat, which, when hung into angle-plates on main sills, will cause the seat to form cushions against sides of body.

Lazy-backs.—Inside rests, or lazy-backs, 6 feet 6 inches long, 3½ inches wide, and ½ inch thick, of best poplar; shall be secured along top edge of upper panel, commencing from back end of body.

Step.—Step in rear, of oak, 3 feet long, 8 inches wide, 1 inch thick, set as shown in drawing, 11½ inches below bottom of back bar, and secured to it by two 1-inch oval iron stays, flattened and carried under full width of step 2½ inches from ends. To have 1-inch oval iron braces full width of step and extending to bottom sills, secured to them in rear of spring-bar with one bolt each. To have a center brace of 1-inch oval iron, full width of step, extending to hind cross-spring, with bolt through spring and spring-bar.

Bows.—Five bows of best ash, 1½ inch wide, ⅝ inch thick, passing through iron staples on upper rails, with tenons at either end to fit into staples on lower rails. Top flat with rounded corners. Height from upper surface of floor to ridge-pole 4 feet 6 inches. Front bow immediately back of driver's seat; back bow set 2¼ inches forward of the inside of the tail-gate, and the top inclined back so as to hang exactly plumb with back of tail-gate. The intermediate bows are to be set equally distant apart in the space between the front and back bows.

Ribs.—Four half bows or ribs, to be equidistant between full bows, and attached to ridge-pole and curtain rails by brass loops, one loop secured to

either side of each bow and rib 7 inches from top of bows, and fastened by two screws to inside of bows. Brass loops on the front bow to be made tapering, smaller at front, to prevent curtain rail from passing beyond front bow.

Curtain rails.—Curtain rails 1 inch diameter, of best ash, to pass through loops on bows and extend from front to back bows, to be held in position by thumb-screws through loops on back bows.

Ridge-pole.—Ridge-pole of ash, 1 inch wide, $\frac{1}{2}$ inch thick, to extend from front to back bow, and, passing through brass loops, to be screwed to center of each bow and rib on the inside and fastened at back end with thumb-screws, the same as the curtain rails. The upper staples shall have openings a trifle over $1\frac{1}{2}$ inch, for bows to pass through into lower staples with openings 1 inch by $\frac{5}{8}$ inch.

Whip socket.—A whip socket to be provided and secured on right upper panel, near driver's seat.

Trimmings and Upholstery.

Seat trimmings.—Inside seats to be upholstered with best curled hair and russet leather of good quality, $1\frac{1}{2}$ inch high.

Lazy-back trimmings.—Lazy-backs are upholstered same as seats. A cushion, to fit driver's seat, of same material and upholstered 3 inches high.

Top and curtains.—Top and curtains to be of No. 6 cotton duck. The top to be fastened to the bows just above the curtain rails on either side by nine brass staples with straps, one to each bow and rib, overlapping curtains 2 inches. Four curtains on each side, to lap over upper panel 3 inches, and secured by nine wire staples and straps to upper rail, also by staples and straps in each bow in center of each curtain edge. Front and back curtains to be securely stitched to front and back edge of top, and wide enough to lap around corners of front and back bows and fasten to staples which secure first and fourth curtains, also fastened to driver's seat and tail-gate by four staples and straps; all curtains to have circular stay-pieces of good leather, well stitched to the canvas, opposite each staple, and roll-up straps with hole in end to take staple on each rib.

Running-Gear.

Wheels.—Back, 4 feet 2 inches; front, 3 feet 6 inches high, without tire. Hub of best elm, rounded back and front, $6\frac{1}{2}$ inches diameter at center, $5\frac{1}{2}$ inches at back, and 5 inches at front, $9\frac{1}{2}$ inches in length, with iron bands at each end of $\frac{3}{16}$-inch iron, $1\frac{1}{2}$ inch wide on front end and $1\frac{1}{4}$ inch wide on back end; mortised for twelve spokes front, and fourteen spokes back, and to have a spoke band of $\frac{5}{8}$-inch oval iron on each side of spokes, mortises $1\frac{5}{8}$-inch by $\frac{9}{16}$-inch, with $\frac{1}{2}$-inch stagger. Spokes $1\frac{3}{4}$-inch, of best sea-

soned white oak. Felloe-tenons $\frac{7}{8}$ inch diameter. Rims $2\frac{1}{4}$ inches deep, $1\frac{5}{8}$ inch on tread, two pieces for each wheel, best seasoned white oak. Tire of steel, $1\frac{3}{4}$ inch wide, $\frac{5}{16}$ inch thick, fastened on with tire bolts between each spoke; two felloe-plates in each wheel over joints of rim.

Axles.—Axles of best quality of refined iron, $1\frac{1}{2}$ inch; left square 7 inches from each collar-washer, then $5\frac{1}{4}$ inches octagon; balance round; the spindles to be of a thickness as will admit of their proper play in the boxes.

Collar-washer, axle-boxes.—Solid collar-washer $2\frac{5}{8}$ inches diameter, $\frac{3}{8}$ inch thick; the face of collar-washer and back end of axle-arm to form a concave, and the inside of back end of axle-box to be made to fit thereon. Axle-boxes of best foundry iron, $7\frac{1}{2}$ inches long, $1\frac{1}{2}$ inch butt, $1\frac{3}{8}$ inch point, with two lugs 2 inches long, $\frac{1}{2}$ inch high. Oil chamber 2 inches long, $\frac{1}{16}$ inch deep. Weight of box to be not less than $4\frac{1}{2}$ pounds. Axles to be so arranged as to track 5 feet from center to center of wheels. Both axles to be straight between the shoulders.

Springs.—Platform, of No. 3 steel, oil tempered. Two front side-springs, each 44 inches long from center of eye to center of coupling, $1\frac{3}{4}$ inch wide, 7 plates. One front cross-spring, 46 inches long, $1\frac{3}{4}$ inch wide, 7 plates, connected to back ends of side-springs with rubber hanger; also gum tubing for ends of the springs, outside diameter of which must be 1 inch. Two hind side-springs, 50 inches long, $1\frac{3}{4}$ inch wide, 8 plates; the front end resting between two iron lugs on plate, securely bolted to bottom sill. The main plate to be coiled at front end to admit gum tubing of 1 inch outside diameter, with $\frac{3}{8}$-inch hole through center; the back end to be convex, $3\frac{3}{4}$ inches long, so that top side of main plate will fit into gum ring; the second plate to be thinned down at each end and to extend within $1\frac{1}{4}$ inch of end of convex, and to wrap two-thirds around the eye of front end of main plate; the hind side-springs must be bent as shown in detailed drawings attached hereto, so that figures Nos. 1 and 2 take a bearing against the under side of sill, on which is placed a piece of rubber $\frac{1}{4}$ inch thick, $1\frac{3}{4}$ inch wide, and 6 inches long, when carrying extra heavy weight. Hind cross-spring 46 inches long, $1\frac{3}{4}$ inch wide, 8 plates; attached to side-springs with rubber hangers, and fastened to body with oak block 12 inches long on top, $7\frac{1}{2}$ inches high, bearing on spring $4\frac{1}{4}$ inches deep and 4 inches wide, bolted between two bars by three $\frac{3}{8}$-inch bolts; these two bars to be each 4 feet 5 inches long (including $1\frac{1}{4}$ inch finish on each end), $1\frac{3}{4}$ inch wide, 3 inches deep in center, and $1\frac{1}{4}$ inch at either end; one $\frac{3}{8}$-inch bolt passing through ends of each bar and through lower sills, one bolt to be 7 inches and the other $12\frac{1}{4}$ inches from back end of body. The hind cross-spring to be bent in regular platform shape, with exception of coil or eye, which must be 1 inch inside diameter to receive a gum tubing of same diameter, with a $\frac{3}{8}$-inch hole through which a $\frac{3}{8}$-inch bolt passes; the second plate to be

thinned at ends and to wrap half-way around the coil of main plate. The spring is secured to the bar by two 1-inch half-oval wrought-iron clips.

Rubber hangers.—The rubber couplings or hangers to consist of an oval iron ring $2\frac{1}{2}$ inches diameter inside, $1\frac{1}{4}$ inch wide, $\frac{3}{16}$ inch thick, into which is forced a rubber ring $2\frac{1}{2}$ inches diameter, 2 inches wide, $\frac{1}{2}$ inch thick. The hind ends of side-springs are made half-round, with $\frac{5}{16}$-inch iron staple on top to keep the hanger in position.

The hind side-springs are set on iron blocks 6 inches long, $\frac{1}{2}$ inch deep in center, secured by two clips, each of $\frac{1}{2}$-inch square iron. The front cross spring is clipped to a wood block 18 inches long, $3\frac{1}{2}$ inches deep, $1\frac{3}{4}$ inch wide. The block is clipped to futchells at either end, with $\frac{7}{8}$-inch half-oval iron clips, flattened on top. The foot-springs are clipped to front axle in the same manner over blocks $2\frac{1}{4}$ inches deep. All clips of best iron; those of the hind and front cross-springs are to pass through iron coupling-plates $\frac{7}{16}$ inch thick and 1 inch wide, and those connecting the side-springs with the axles are to pass through coach-clips placed on under side of axles. All springs to have 5 inches sweep, except hind side-springs, which should have 6 inches sweep. The iron hanger couplings which pass through the rubber hangers connecting the front cross-spring to back ends of front side-springs, and the hind cross-spring with back ends of hind side-springs, are to be made half-round to suit the inside circle of rubber hanger, the upper surface of the portion passing through the rubber hanger to be concave to face the convex surface of end of spring in same hanger, the width of concave to be $1\frac{1}{4}$ inch across to give good bearing on inside of rubber-hanger, the length of the coupling to be $1\frac{5}{8}$ inch from under side of part which passes through rubber hanger to center of eye, where $\frac{3}{8}$-inch bolt passes through and connects with side-springs, the eye to be $1\frac{1}{2}$ inch diameter by $\frac{5}{16}$ inch thick.

Futchells.—Futchells to be $49\frac{1}{2}$ inches extreme length, $21\frac{1}{2}$ inches long, $2\frac{1}{4}$ inches wide, and $1\frac{3}{4}$ inch thick in front of futchell-bed (including 18 inches for jaws), and 28 inches long, $2\frac{1}{4}$ inches wide, tapering to $1\frac{1}{2}$ inch at each end, and $1\frac{1}{2}$ inch deep, from front of futchell-bed. Jaws of futchells to have an iron plate on bottom, full width of jaws and $\frac{1}{4}$ inch thick, running full length of jaws; then to be oval $5\frac{1}{2}$ inches in length, 1 inch wide, and $\frac{5}{8}$ inch thick, and forming a base where it is bolted to futchell-bed, then running oval 11 inches, where it forms flat $1\frac{5}{8}$ inch wide and $\frac{7}{8}$ inch thick and receives bolt coming through fifth-wheel, and continues $13\frac{1}{2}$ inches, and then it is tapered off to end of futchells. Futchells to have iron plates on inside of jaws $\frac{1}{8}$ inch thick, 2 inches wide, 18 inches long, and secured to jaw with screws, and to have a plate of iron $3\frac{1}{2}$ inches long, $\frac{1}{8}$ inch thick, and $1\frac{1}{2}$ inch wide on the outside of each jaw, secured by a screw in each end, through which the pole-pin is to pass.

Futchell-bed.—Futchell-bed, $3\frac{1}{2}$ inches deep, $2\frac{1}{2}$ inches wide, 35 inches

long, including 2½ inches finish on either end; iron plate $\frac{5}{16}$ inch thick, bolted on under side full length and width of bed, extending along side-bars to within 1½ inch of splinter-bar, where it is spliced to splinter-bar plate by two bolts passing through each. Transom plate, male and female, 26½ inches long, or of a sufficient length to suit futchell-bed and fifth-wheel, 2½ inches wide, ⅜ inch thick, secured by four ⅜-inch bolts with countersunk heads passing through bed and plate, with hole to receive a ¾-inch king-bolt which is nutted and threaded on top, with spring-key above nut.

Chairs.—Chairs, or upper platform bars, consist of three bars 4 feet 5 inches long, center bar (which must have king-bolt plate on top 10 inches long), 2½ inches at center and tapering to 2 inches at ends. Front and rear bars 1¾ inch thick; all three bars to be 6 inches deep, and cut away by degrees to reach the depth of 1¾ inch at the ends. Three bars framed across upper platform bars, running from front to back bar, one bar to rest opposite center of body and one to rest opposite each sill. These bars are fastened to body by ½-inch bolts passing through sills and bars at either end; center bar is bolted at back end to body with $\frac{5}{16}$-inch bolts, also bolted to back and front upper platform-bars with ½-inch bolts. Bars to be cut out between the bearings, as per drawing. The upper transom plate is to be secured by four bolts with countersunk heads passing through center bar of upper platform.

Fifth-wheel.—Two circles of iron 30 inches diameter, 1½ inch wide, ⅜ inch thick, with iron hoops ¾ inch wide, $\frac{3}{16}$ inch thick, shrunk on outer edge of upper half to receive lower half. The lower half is secured to futchells and futchell-bed, with intervening wood blocks, by six bolts with countersunk heads. The upper half is secured to chairs by six bolts with countersunk heads.

Side bars.—Side bars, 1¼ inch wide and 1½ inch deep, mortised into futchell-bed and splinter-bar, to have iron plates ¼ inch thick, full length and width of bars, securely bolted to them and welded plates under futchell-bed.

Splinter-bar.—Splinter-bar, 4 feet 6 inches long, 1¾ inch deep in center, and 1½ inch deep at ends, 1½ inch wide, to rest on two iron ferrules each 2 inches diameter and 1¼ inch deep and made of ⅛-inch iron, filled with wood on top of futchells, 2 inches from front end. The splinter-bar to have a stay-iron 1¾ inch below futchells (to receive block for draught spring), 1⅜ inch wide and ⅜ inch thick, extending 7 inches in length, with lugs extending upward on outside of futchells to within ¼ inch of splinter-bar, where they form $\frac{7}{16}$-inch round bolts, and pass through splinter-bar and are nutted on top; from the lugs on each side of futchells the stay-iron is to be oval, 9½ inches in length, 1 inch wide, and $\frac{9}{16}$ inch thick, then forming flat and extending 2 inches, where it branches on to side-bars and

is spliced with plate of futchell-bed as hereinbefore specified; then extending along splinter-bar 2½ inches where eye passes through for swingle-tree attachment, then extending 1½ inch where lugs are formed to receive front side-springs, then tapered off to ends of splinter-bar. The splinter-bar to have on top an iron plate 1¼ inch wide, ⅜ inch thick, extending 15 inches from ends and 8 inches on side bars; securely bolted to each, and to form a roughened step 3 inches diameter on either end; also to have on top at center an iron plate 10 inches long, 1¼ inch wide, and ⅛ inch thick.

Pole.—Tongue or pole to be 3¼ inches wide at front of jaws and 2⅜ inches at back end, 2 inches thick, 9 feet 6 inches long from futchell to extreme front end, 1¾ inch square at front end, with pole-hook and strap-loops of ½-inch round iron, flattened at ends to 1 inch by ¼ inch, and not less than 7 inches long, bolted to front end of pole by two $\frac{5}{16}$-inch bolts. A pole-stop of iron 1¼ inch wide, ¼ inch thick, to be placed on under side of futchells at their back ends to allow the pole to drop 1½ inch below futchells at that point. The pole is connected with the wagon by a pin of ½-inch round iron passing through futchells and pole 7 inches from front end of futchells and secured by a spring-key.

Swingle-trees.—Swingle-trees 34 inches long, 2½ inches wide, and 1½ inch thick in center, 1½ inch at ends, with ½-inch iron staple at center, passing through and fastened with screw and nut. Swingle-trees to be made of best hickory and have a ferrule fastened on each end, and a cock-eye with ring 1¾ inch diameter inside, of ⅜-inch iron, screwed into each end three inches, the screw of cock-eye to be ½ inch thick; the swingle-trees to be hung to an iron rod from the half-elliptic spring back of splinter-bar by a swivel attachment of iron, from the ends of spring to center of swingle-trees; the swingle-trees also to have iron plates where they strike the wheels to prevent wearing. The iron rod connecting swingle-tree with spring back of splinter-bar is to pass through an oval-shaped iron loop of ½-inch iron bolted to splinter-bar opposite ends of half-elliptic spring. The half-elliptic spring above referred to is to be 1¾ inch wide, 39½ inches extreme length, having five plates No. 3 oil-tempered steel.

Brake.—(See drawing attached.) The brake-arms "A" are clevised on the hangers into which front ends of hind side-springs are fastened, the same $\frac{7}{16}$-inch bolt passing through both and nutted on the inside; length of each arm 11 inches from center of outside eye to brake-block. Diameter of iron ⅞ inch at upper end and extending down to within 1¼ inch of brake-block, where it must be 1⅛ inch diameter, extending only ¼ inch to keep connecting rod "D" in place; the brake-blocks to be made of hickory, 1½ inch thick and 2 inches wide, and fastened on wrought-iron shoes with six wood screws, No. 16, 1½ inch long; the fulcrum-clips "L" are each made with an arm or journal for levers "C" to work on, and fastened on the hind side-spring 2 inches in front of axle by two ends

$\frac{1}{2}$ inch diameter passing through a coupling-plate underneath spring-block, threaded and nutted, the spring-block to turn down $\frac{3}{8}$ inch to keep coupling in its place; also, a keeper-plate $1\frac{3}{4}$ inch wide by $\frac{3}{16}$ inch thick, to be bolted on top of springs and passed under clips and bent up behind the back clips, and also in front of front clips, and of fulcrum-clips to keep them from pulling forward; the fulcrum-clips should not be less than $1\frac{1}{4}$ inch wide by $\frac{1}{2}$ inch thick, the arms to be $1\frac{1}{4}$ inch diameter extending out from springs $\frac{3}{4}$ inch, then to extend out $1\frac{1}{4}$ inch by fully $\frac{7}{8}$ inch diameter, then to extend $\frac{3}{4}$ inch by $\frac{5}{8}$ inch for thread and have a $\frac{5}{8}$-inch nut fitted on; these journals must be turned up in a lathe and be well fitted; the back levers "C" work on these journals, the lower ends being at journals $1\frac{1}{2}$ inch wide by $\frac{9}{16}$ inch thick, bent forward so that they will not strike the hubs of the hind wheels when in use; they are also close up to the shoulders of journals, while the longer ends are $1\frac{5}{8}$ inch wide by $\frac{9}{16}$ inch thick at journals at the outer side, so that they will not strike the body where it connects with longitudinal rod "F" by $\frac{3}{8}$-inch bolt; length of upper ends from center of journals to center of bolt 21 inches; length of lower ends from center of journals to center of bolt 6 inches, where they connect with rods "D" by $\frac{7}{16}$-inch bolt; length of rods "D" from center to center 25 inches and their diameter $\frac{5}{8}$ inch; length of rods "F" 7 feet $\frac{3}{4}$ inch from center to center; the foot-lever "G" is $1\frac{1}{2}$ inch wide by $\frac{1}{2}$ inch thick, $5\frac{1}{8}$ inches from center of hole, tapered in width down to the circle of square hole, where it connects with transverse bar and is fastened with $\frac{3}{4}$-inch nut; the upper end is tapered in width to $1\frac{1}{8}$ inch from center of $\frac{9}{16}$-inch hole, where it turns inward $4\frac{1}{2}$ inches, then turns back 1 inch to keep driver's foot from slipping off. The transverse bar "K" is 5 feet 6 inches long between the inside of foot-lever and arm that connects with longitudinal rods, the arm to be turned up $4\frac{1}{2}$ inches in length from center of rod to center of hole, and to be $1\frac{1}{4}$ inch wide by $\frac{1}{2}$ inch thick; this bar must be $1\frac{3}{8}$ inch diameter, extending inward from the ends 3 inches to admit of grooves being cut $\frac{1}{8}$ inch deep by $\frac{1}{4}$ wide to admit of wearing plates "II," which are let into the blocks under main sills flush with the wood, and fastened with four wood screws No. 14, 1 inch long; spring "Q" to be fastened on top rail at front to keep foot-lever in position when not in use.

Stretcher-rest.—A stretcher-rest to be provided on the floor of the wagon, constructed in the following manner: Two light half-elliptic springs of two plates, each $1\frac{1}{4}$ inch wide by $\frac{3}{16}$ inch thick, set 2 feet 7 inches center to center, on each side of wagon, each spring hinged at one end to a shoe which is secured to the floor by two $\frac{1}{4}$-inch bolts; the bolts by which the springs are hinged to the shoes are to pass through gum tubing in eyes of springs; outside diameter of tubing is to be 1 inch and inside diameter $\frac{3}{8}$ inch, to correspond with diameter of bolts, the heads of these bolts on sides of shoes next to panels are to be let in flush with shoes. The other

end of each spring will have a brass roller 2½ inches diameter by 1¼ inch wide, to run on iron plate, let into floor and secured to it by screws. The springs to sustain a roller-bar of steel ⅜ inch thick by 1¼ inch wide, and 6 feet ½ inch long, having four double-tapered ash rollers each 2 inches diameter, except the one hereinafter specified, placed as hereinafter directed and as shown in drawing, having iron rings or ferrules on ends ¼ inch wide by ⅛ inch thick. The first and second rollers from rear to be made each in two equal sections and revolve on ½-inch gas-pipe passing through their centers lengthwise; an iron washer 2 inches diameter by ⅛ inch thick to be shrunk on the middle of this pipe between the sections each section to have iron ferrules on ends ¼ inch wide by ⅛ inch thick. Iron pins ½ inch diameter to be welded in each end of pipe to project ¼ inch to set into roller-bar, the rollers to be kept permanently on the pipe by iron washers 1¼ inch diameter by $\frac{1}{16}$ inch thick, properly riveted on to these iron pins. The third and fourth rollers from the rear to be provided with iron pivots set firmly in their ends to revolve in roller-bars. The fourth roller from rear to have a rubber washer 3½ inches diameter outside and ⅜ inch thick, to be set firmly on the center. The roller-bar on the right side of ambulance wagon to be provided with three U-shaped slots ¾ inch deep and ½ inch wide; the roller-bar on the left side of ambulance wagon to be provided with three ½-inch holes set ½ inch from top edge of roller-bar to receive pivots of first, second, and fourth rollers.

Height from bottom of floor to top of roller-bar to be 4 inches. The center of plate receiving the third roller from rear end to be ½ inch above top of roller-bar, and the slot of this plate to be deep enough to bring the third roller in a line with the top of the other three rollers. The third roller to be ½ inch less in diameter than the other three (see drawing attached, showing position of rollers and method of attaching the third roller from rear end of wagon to spring).

Painting.—All parts of the wood-work of the body, with the exception of the bows, ribs, ridge-poles, and curtain-rails, will be painted dark olive-green. A first coat of heavy boiled linseed oil will be laid on hot. When this priming is thoroughly dry three successive coats of the olive-green paint will be laid on, mixed with boiled linseed oil, without admixture of turpentine or varnish. Sufficient time for drying of each coat will be allowed. All iron-work will be painted black, with three coats of lead paint mixed with boiled linseed oil. On the panels of the upper sections, midway between the second and third bows from the front, the letters "U. S.," six inches in height, will be conspicuously painted in bright yellow of the tint of the hospital flag. On the panel, between the first and second bows, the red Geneva or Greek cross will be painted on a white ground. All the wood-work of the running-gear will be painted in the same manner as that of the body of the wagon.

General provisions.—Spokes and wheel-boxes to be well wedged; all tenons to be secured with wooden pins except those of bow; all welds to be made smooth and strong; corners of felloes to be rounded between spokes. Lower studs and sills to be chamfered and neatly finished; all clips to be neatly finished with cross-tie washers 1 inch by 1½ inch; sharp corners of bows to be removed; coverings of seats and lazy-backs to be well fastened.

All wood and iron work to be of best material; sills, cross-bars, studs, rails, foot-boards of body to be of best seasoned white oak; frame-work of *upper section* of body, bows, lazy-back, curtain-rails, and cleats to be of best seasoned ash; all panels to be of best seasoned yellow poplar; wood-work of running-gear to be of best hickory.

Parts to be interchangeable.—The ambulance wagon is to be so constructed that the several parts of one wagon will be interchangeable with any other wagon, so as to require no numbering or arranging for putting together, and the work in all its parts executed in the best workmanlike manner.

The wagon may be prepared for packing by removing the front board, the top and back of driver's seat, front lazy-back, curtain-rails, ridge-pole and bows, which will allow the upper panels to lay on the tail-gate and front bar, and all can be packed inside of lower part of body.

SPECIFICATIONS

FOR

HAND STRETCHER FOR THE AMBULANCE WAGON.

Side poles of ash (see drawings, FIG. 1*b*), six (6) feet two (2) inches long and two (2) inches square, with a groove one (1) inch wide and one and three-eighth ($1\frac{3}{8}$) inch deep, and twenty-one and a half ($21\frac{1}{2}$) inches in length at each end, leaving nine-sixteenths ($\frac{9}{16}$) inch on inside and seven-sixteenths ($\frac{7}{16}$) inch outside.

Handle pieces of ash, thirteen (13) inches long, fifteen-sixteenths ($\frac{15}{16}$) of an inch wide, one and three-sixteenths ($1\frac{3}{16}$) inch deep; of which six and one-fourth ($6\frac{1}{4}$) inches is rounded and shaped for hand, as indicated in the drawing, (FIG. 1*b*). They are retained in the groove by two (2) pieces of iron five-eighths ($\frac{5}{8}$) inch wide, one-eighth ($\frac{1}{8}$) inch thick, and two (2) inches long, which are let in flush on the bottom of the side poles, the middle of the first piece being seven-eighths ($\frac{7}{8}$) of an inch from the end of the pole, the middle of the second piece six and one-half ($6\frac{1}{2}$) inches from the end of the pole; and are fastened by two (2) rivets three-sixteenths ($\frac{3}{16}$) of an inch each. An iron pin, one-fourth ($\frac{1}{4}$) of an inch in diameter and projecting one-eighth ($\frac{1}{8}$) of an inch, is inserted in the under side of the handle seven and one-half ($7\frac{1}{2}$) inches from the front end of the handle, to come in contact with the first iron piece when the handle is extended and thus prevent its further extension.

A T-plate, indicated in FIG. 1*a*, supports the back end of the handle when telescoped, with its center eleven and three-eighths ($11\frac{3}{8}$) inches from the end of the pole, with a one-fourth ($\frac{1}{4}$) inch hole one and one-eighth ($1\frac{1}{8}$) inch toward the front of the pole to receive pivot for stretch-irons, and three-sixteenths ($\frac{3}{16}$) inch hole at the other two ends; the end toward the center is two (2) inches long with the hole one-half ($\frac{1}{2}$) inch from the end; in the cross branch of the T-piece the hole is one-fourth ($\frac{1}{4}$) inch from the end.

The legs are of ash, one and three-sixteenths ($1\frac{3}{16}$) inch deep, fifteen-sixteenths ($\frac{15}{16}$) of an inch wide, seven and three-fourths ($7\frac{3}{4}$) inches long, and work on an iron pivot one-fourth ($\frac{1}{4}$) of an inch in diameter, which passes through the pole twelve and one-half ($12\frac{1}{2}$) inches from the end and three-fourths ($\frac{3}{4}$) of an inch from the under side of the pole. The legs are held in position when open or closed by a spring six (6) inches long by one-half ($\frac{1}{2}$) an inch wide, which tapers from one-eighth ($\frac{1}{8}$) of an

inch at the point let in the groove to one-sixteenth ($\frac{1}{16}$) of an inch at the point resting on the top of the leg. The top of the leg is bound for a distance of two and a half ($2\frac{1}{2}$) inches by an one-eighth ($\frac{1}{8}$) inch iron strap, which is secured three-quarters ($\frac{3}{4}$) of an inch from its end by a pin of one-fourth ($\frac{1}{4}$) inch iron. (See FIG. 1*b*.)

Stretch-irons, curved as indicated in the drawing, FIGS. 2 and 4, are of wrought-iron, three-fourths ($\frac{3}{4}$) of an inch wide, one-third ($\frac{1}{3}$) of an inch thick, and twenty-one and a half ($21\frac{1}{2}$) inches long from out to out, hinged in the middle, and doubling on themselves three and a half ($3\frac{1}{2}$) inches, as indicated in FIG. 3; one and a half ($1\frac{1}{2}$) inch from either end of the stretch-irons is a one-quarter ($\frac{1}{4}$) inch hole to receive the iron pivot running through the T-plate, as mentioned above.

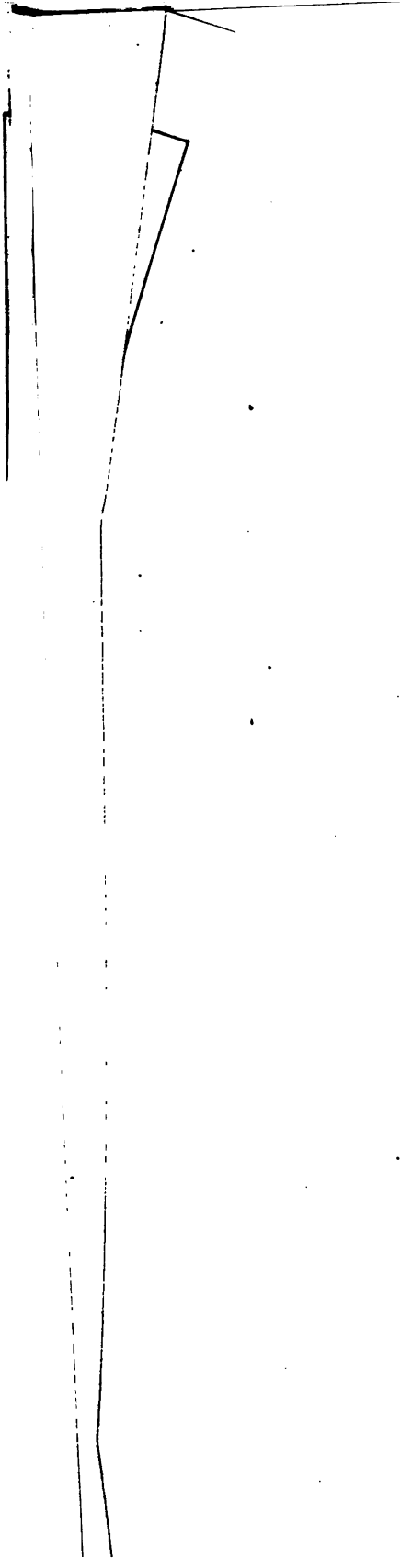
Canvas of fifteen (15) ounce U. S. Army duck, with a hem one (1) inch deep at both ends, turned under and tacked securely to the side of the side poles their entire length, viz: six (6) feet four (4) inches.

Buckled strap twenty-five (25) inches long and one (1) inch wide, to secure litter when folded.

Approved by the Secretary of War May 25, 1881.

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, May 27, 1881.

3188, Q. M. G. O., 1881. Filed with 5157, Q. M. G. O., 1877. Ambulance Board Papers, 1875.



SPECIFICATIONS

OF THE SIZE, ETC., OF

SIX-MULE U. S. ARMY WAGON HARNESS,

PREPARED BY BOARD OF OFFICERS CONVENED AT PHILADELPHIA, PA., BY S. O. NO. 12, WAR DEPARTMENT, A. G. O., 1875, AND APPROVED BY THE SECRETARY OF WAR MARCH 4, 1875.

WHEEL.

Two quilors.—Breech-straps 3 feet 6 inches long, 3½ inches wide, sewed into 4-inch rings of ⅜-inch iron.

Hip-straps, 3 feet 11 inches long, 2½ inches wide.

Stay-pieces, 2 feet long, 2½ inches wide, with 1½-inch buckles.

Cross-straps to buckle into stay-pieces, 6 feet long, 1½ inch wide.

Side-straps, 4 feet long, 1½ inch wide.

Tie-straps, 15 inches long, ½ inch wide, tapering to a point at both ends.

Two belly-bands.—Long side 2 feet 3 inches long, 2 inches wide, with a 2-inch buckle; short side 1 foot 5 inches long and 2 inches wide.

Two hair collars, 18 to 19 inches long, with single straps and safe-leathers, and buckle 1 inch wide, and to be high-peaked.

Two pairs strong hames to suit, of white-oak root, ironed, with hooks, breast-rings 1½ inch square, staples and line-rings.

Two pairs hame-straps, lower one 5 feet 6 inches long, ½ inch wide; upper one 4 feet 6 inches long, ½ inch wide, of alum-tanned leather.

Two choke-straps, 3 feet 2 inches long, 2 inches wide, 2-inch roller buckle; billet 20 inches long.

Two bridles—Crown piece 2 feet long, 1¾ inch wide, to be split so as to form straps to receive the buckles of *throat-latch*.

Cheek-pieces, each 10 inches long, 1 inch wide, cut 2 feet 10 inches long, to form billet for bit.

Front pieces, 11½ inches long, 1 inch wide.

Stay-pieces, from blinds to crown piece, 16 inches long, 1½ inch wide. No nose-piece.

Blinds, 10 inches long, 5¼ inches wide in swell, to be half-oval shaped.

Reins.—Long side 4 feet long, 1 inch wide; short side 2 feet long, 1 inch wide, with 1-inch buckle.

Throat-straps, 19 inches long, ¾ inch wide, buckle at each end.

Bit, wrought-iron, japanned, bright mouth, jointed, to weigh 7 pounds to the dozen.

One chin-chain, 10 inches long, of No. 8 iron, short-twisted links, with S-hook at each end and 1½-inch ring in center.

One coupling strap, 6½ feet long, 1 inch wide, with 1-inch buckle.

Two pairs chain pipes, 2 feet 6 inches long, 2½ inches wide.

Two pairs trace chains, 7 feet long, 12 twisted links to the foot, of No. 2 iron, with hooked T on one end, heavy swivel in center of chain; on front end of trace-chain 6 straight links No. 1 iron, 2½ inches long, weight 10 pounds per pair; (iron to be of the best quality.)

One pair breast-chains, 28 inches long, 14 twisted links to the foot, of No. 2 iron; weight 4 pounds per pair.

Two neck-straps, 3 feet 1 inch long, 2¼ inches wide, with 2¼-inch buckle.

Two neck-chains, 4 feet 6 inches long, 14 twisted links to the foot, of No. 4 iron; T and loop to be riveted on to the neck-strap; swivel in chain; weight 6 pounds per pair.

One saddle, made on tree of the kind known as "Morgan;" the head and gullet in one piece, (solid fork;) to be covered in the usual manner with raw-hide; leather flaps running under the tree and extending 6 inches below the girthing D; three girthing straps (1¼) one and one-quarter inch wide each—one running across the tree in front of pommel to the D on the opposite side, another around the pommel to the D's on each side, and the other from the same D' to the extension of the bar behind the cantle, all fastened to the tree with brass screws; one lacing strap on each side from the D', (1¼) one and one-quarter inch wide, (3) three feet long, tapering to a point; one hair girth (16) sixteen inches long, (4) four inches wide at the middle, a (2½) two and one-half inch ring on each end; stirrup leather (2) two inches wide, (5) five feet long, with (2) two-inch buckles; fenders, or leg-guards, (17) seventeen inches long, (6½) six and one-half inches wide at top, (8½) eight and one-half inches wide at bottom. The fenders to be removable at pleasure.

Heavy wooden stirrups, (4) four inches wide on bottom; (2) two rivets.

Lead.

Four collars, 17½ to 18 inches long, made same as for wheel harness.

Four pairs hames to suit, of same material as for wheel harness, ironed, with hooks, rings, and staples, and with straps, as in wheel harness.

Four bridles, same as for wheel harness.

Four neck-straps and *chains*, as for wheel harness.

Four belly-bands, as for wheel harness.

Four pairs chain-pipes, as for wheel harness.

Four pairs trace-chains, as for wheel harness.

One bearing-chain, 4 feet long, 14 twisted links to the foot, of No. 4 iron, with a hooked **T** on each end and 1¾-inch ring in middle.

Four cruppers and hip-straps.—Back strap 5 feet long, tapering from 3½ inches to 2½ inches wide; hip-straps each 2 feet four inches long, 1½ inch wide, each with 3-inch rings, and a small open ring or **S**-hook to attach it to trace-chain.

Four back-bands, 3 feet four inches long, 3¼ inches wide.

One martingale, 4 feet long, 1½ inch wide—to buckle into bit.

Four coupling-straps, 5 feet 6 inches long, ¾ inch wide.

One check-rein, 4 feet 1 inch long, 1 inch wide—to buckle into the bit at each end, with a ring sewed in the center to receive the lead line.

One jockey stick—to be of hickory, split with the grain—not sawed—4 feet 6 inches long, with chains, a **T** at end of one chain and a snap at end of the other; chains to be 10 inches long, of No. 8 iron.

One lead line, 28 feet long, 1 inch wide, with buckle at one end and an 8-inch loop at the other.

Two lead-line rings, 3 inches in diameter, to be attached by a leather strap 12 inches long, 1 inch wide, with buckle; one to the line-ring in the near hame of the near swing mule, the other to the back strap over hip strap of the near lead mule, the lead line to pass through these two 3-inch rings.

One whip—black-snake, 5 feet 6 inches long, 1½ inch in diameter at the butt.

The whole, except jockey stick, to be packed in a box 20 inches wide, 20 inches deep, and 36 inches long, of 1-inch stuff, coopered with wood hoops or iron, as may be required.

The whole to be made of the best material—(leather of best quality, oak-tanned,) sewing to be made with good waxed thread; and in addition, the quilors, belly-bands back-bands, cruppers and hip-straps, chain-pipes, neck-straps, and choke-straps to have one No. 9 copper rivet and burr between each two rows of stitches; japanned, malleable, barrel-pattern buckles to be used throughout, and subject to inspection during process of manufacture and also when finished.

Weights of the various parts of a complete set of standard six-mule U. S. Army-wagon harness, in use at the Fort Leavenworth, Kans., depot of the Quartermaster's Department, U. S. A.

Number.	ARTICLES.	Wheel for two Mules.	Lead for four Mules.	Total.
		Pounds.	Pounds.	Pounds.
4	Back-bands	.....	4 1/16	4 1/16
6	Belly-bands	1 1/16	3 5/16	5
1	Bearing-chain	.....	2 8/16	2 8/16
2	Breast-chains	4 1/16	.....	4 1/16
6	Bridles	6 8/16	13	19 8/16
6	Pairs chain pipes	4 4/16	8 8/16	12 1/16
1	Chin-chain	4/16	.....	4/16
1	Check-rein	.....	1	1
2	Choke-straps	2	.....	2
6	Collars—two 17½ in., two 18 in., two 19 in.	11	20 8/16	31 8/16
5	Coupling-straps	8/16	1 8/16	2
4	Cruppers, with hip-straps	.....	10 8/16	10 8/16
6	Pairs hames	8	15 8/16	23 8/16
12	Hame straps	10/16	1 2/16	1 1/16
1	Jockey-stick	.....	2 8/16	2 8/16
1	Lead line	.....	2 4/16	2 4/16
2	Lead-line rings	.....	1/16	1/16
1	Martingale	.....	8/16	8/16
6	Neck-straps and chains	8	16	24
2	Quilors	12	.....	12
1	Saddle	12 8/16	.....	12 8/16
6	Pairs trace-chains	22	44	66
1	Whip	.....	1 4/16	1 4/16
	TOTAL	94 1/16	149 9/16	243 10/16

OFFICE OF THE DEPOT QUARTERMASTER,
Fort Leavenworth, Kansas, 19th December, 1881.

Respectfully submitted.

GEO. H. WEEKS,
Quartermaster U. S. Army, Depot Quartermaster.

WAR DEPARTMENT,
Q. M. General's Office, January 4, 1882.

(7975 Q. M. G. O., 1881.)

SPECIFICATIONS

OF THE SIZE, ETC., OF

FOUR-MULE U. S. ARMY WAGON HARNESS.

PREPARED BY BOARD OF OFFICERS CONVENED AT PHILADELPHIA, PA., BY S. O. NO. 12, WAR DEPARTMENT, A. G. O., 1875, AND APPROVED BY THE SECRETARY OF WAR MARCH 4, 1875.

WHEEL.

Two quilors.—Breech-straps 3 feet 6 inches long, 3½ inches wide, sewed into 4-inch rings of ⅜-inch iron.

Hip-straps, 3 feet 11 inches long, 2½ inches wide.

Stay pieces, 2 feet long, 2½ inches wide, with 1½-inch buckles.

Cross-straps, to buckle into stay pieces, 6 feet long, 1½ inches wide.

Side-straps, 4 feet long, 1½ inch wide.

Tie-straps, 15 inches long, ½ inch wide, tapering to a point at both ends.

Two belly-bands.—Long side 2 feet 3 inches long, 2 inches wide, with a 2-inch buckle; short side 1 foot 5 inches long and 2 inches wide.

Two hair-collars, 18 to 19 inches long, with single straps and safe-leathers, and buckle 1 inch wide, and to be high-peaked.

Two pairs strong hames to suit, of white-oak root, ironed, with hooks, breast-rings 1½ inch square, staple and line-rings.

Two pairs hame-straps, lower one 5 feet 6 inches long, ½ inch wide, upper one 4 feet 6 inches long, ½ inch wide, of alum-tanned leather.

Two choke-straps, 3 feet 2 inches long, 2 inches wide; 2-inch roller-buckle; billet 20 inches long.

Two bridles.—Crown piece 2 feet long, 1¾ inch wide, to be split so as to form straps to receive the buckles of *throat-latch*.

Cheek pieces, each 10 inches long, 1 inch wide, cut 2 feet 10 inches long, to form billet for bit.

Front pieces, 11½ inches long, 1 inch wide.

Stay pieces, from blinds to crown pieces 16 inches long, 1½ inch wide. No nose-piece.

Blinds.—10 inches long, 5½ inches wide in swell, to be half-oval shaped.

Reins.—Long side 4 feet long, 1 inch wide; short side 2 feet long, 1 inch wide, with 1-inch buckle.

Throat-straps, 19 inches long, ¾ inch wide, buckle at each end.

Bit.—Wrought-iron, japanned, bright-mouth, jointed, to weigh 7 pounds to the dozen.

One chin-chain, 10 inches long, of No. 8 iron, short-twisted links, with S-hook at each end and 1½-inch ring in center.

One coupling-strap, 6½ feet long, 1 inch wide, with 1-inch buckle.

Two pairs chain-pipes, 2 feet 6 inches long, 2½ inches wide.

Two pairs trace-chains, 7 feet long, 12 twisted links to the foot, of No. 2 iron, with hooked T on one end, heavy swivel in center of chain; one front end of trace-chain 6 straight links No. 1 iron, 2½ inches long; weight 10 pounds per pair; (iron to be of the best quality.)

One pair breast-chains, 28 inches long, 14 twisted links to the foot, of No. 2 iron; weight 4 pounds per pair.

Two neck-straps, 3 feet 1 inch long, 2¼ inches wide, with 2¼-inch buckle.

Two neck-chains, 4 feet 6 inches long, 14 twisted links to the foot, of No. 4 iron; T and loop to be riveted on to the neck-strap; swivel in chain; weight 6 pounds per pair.

One saddle, made on tree of the kind known as "Morgan;" the head and gullet in one piece, (solid fork;) to be covered in the usual manner with raw-hide leather flaps running under the tree and extending 6 inches below the girthing D; three girthing-straps (1¼) one and one-quarter inch wide each—one running across the tree in front of pommel to the D on the opposite side, another around the pommel to the D's on each side, and the other from the same D's to the extension of the bar behind the cantle, all fastened to the tree with brass screws; one lacing-strap on each side from the D's (1¼) one and one-quarter inch wide, (3) three feet long, tapering to a point; one hair girth (16) sixteen inches long, (4) four inches wide at the middle, a (2½) two and one-half inch ring on each end; stirrup-leather (2) two inches wide, (5) five feet long, with (2) two-inch buckles; fenders or leg-guards (17) seventeen inches long, (6½) six and one-half inches wide at top, (8½) eight and one-half inches wide at bottom. The fenders to be removable at pleasure.

Heavy wooden stirrups, (4) four inches wide on bottom; (2) two rivets.

Lead.

Two collars, 17½ to 18 inches long, made same as for wheel-harness.

Two pairs hames to suit, of same material as for wheel-harness, ironed, with hooks, rings, and staples, and with straps as in wheel-harness.

Two bridles, same as for wheel-harness.

Two neck-straps and chains, as for wheel-harness.

Two belly-bands, as for wheel-harness.

Two pairs chain-pipes, as for wheel-harness.

Two pairs trace-chains, as for wheel-harness.

One bearing-chain, 4 feet long, 14 twisted links to the foot, of No. 4 iron, with a hooked T on each end and 1¾-inch ring in middle.

Two cruppers and hip-straps.—Back-strap 5 feet long, tapering from 3½

inches to 2½ inches wide; hip-straps each 2 feet 4 inches long, 1½ inch wide, each with 3-inch rings, and a small open ring or S-hook to attach it to trace-chain.

Two back-bands, 3 feet 4 inches long, 3¼ inches wide.

One martingale, 4 feet long, 1½ inch wide—to buckle into bit.

Two coupling-straps, 5 feet 6 inches long, ¾ inch wide.

One check-rein, 4 feet 1 inch long, 1 inch wide—to buckle into the bit at each end, with a ring sewed in the center to receive lead-line.

One jockey-stick.—To be of hickory split with the grain—not sawed—4 feet 6 inches long, with chains; a T at end of one chain and a snap at the end of the other; chains to be 10 inches long, of No. 8 iron.

One lead-line, 21 feet long, 1 inch wide, with buckle at one end and an 8-inch loop at the other.

One lead-line ring, 3 inches in diameter, to be attached by a leather strap 12 inches long, 1 inch wide, with buckle to the back-strap over hip-strap of the near lead mule; the lead-line to pass through this 3-inch ring.

One whip—"black-snake," 5 feet 6 inches long, 1½ inch diameter at butt.

The whole, except jockey-stick, to be packed in a box 18 inches wide, 17 inches deep, and 34 inches long, of 1-inch stuff, coopered with wood hoops or iron, as may be required.

The whole to be made of the best material, sewing to be made with good waxed thread; and in addition, the quilors, belly-bands, back-bands, cruppers and hip-straps, chain-pipes, neck-straps, and choke-straps to have one No. 9 copper rivet and burr between each two rows of stitches; japanned, malleable barrel-pattern buckles to be used throughout; to be subject to inspection during process of manufacture and also when finished.

Leather to be of the best quality, oak-tanned.

(724, Q. M. G. O., 1875.)

SPECIFICATIONS

OF THE SIZE, ETC., OF

SIX-HORSE U. S. ARMY WAGON HARNESS.

PREPARED BY BOARD OF OFFICERS CONVENED AT PHILADELPHIA, PA., S. O. NO. 12, WAR DEPARTMENT, A. G. O., 1875, AND APPROVED BY THE SECRETARY OF WAR MARCH 4, 1875.

WHEEL.

Two quilors.—Breech-straps 3 feet 8 inches long, 3½ inches wide, sewed into 4-inch rings of ⅝-inch iron. Hip-straps 4 feet long, 3 inches wide. Stay pieces 2 feet 2 inches long, 3 inches wide, with 1½-inch buckles. Cross-straps to buckle into stay-pieces 6 feet long 1½ inch wide. Side-strap 5 feet 6 inches long, 1½ inch wide. Tie-straps 15 inches long, ½ inch wide, tapering to a point at both ends.

Two belly-bands.—Long side, 2 feet 4 inches long, 2 inches wide, with a 2-inch buckle; short side 1 foot 6 inches long, 2 inches wide.

Two hair collars, 19 to 21½ inches long, (measured inside the rim,) with one 1½-inch buckle, with single strap and safe-leather, and to be high-peaked. Two pairs strong hames to suit, made of white-oak root, ironed, with hooks. Breast-rings 1½ inch square staples, and line-rings.

Two pairs hame-straps.—Lower one 5 feet 6 inches long, ½-inch wide; upper one 4 feet 6 inches long, ½-inch wide, of alum-tanned leather.

Two choke-straps, 3 feet 4 inches long, 2 inches wide; 2-inch roller buckles; billet 20 inches long.

Two bridles.—Crown piece 2 feet 2 inches long, 1¾ inch wide. Cheek pieces each 10 inches long, 1 inch wide, (cut 34 inches long to form billets for bits.) Front piece 12½ inches long, 1 inch wide. Stay pieces, from blinds to crown pieces, 16 inches long, 1½ inch wide. No nose-piece. Blinds 10 inches long, 5¼ inches wide in the swell; to be half-oval shaped. Reins, long side 4 feet 2 inches long, 1 inch wide; short piece 2 feet long, 1 inch wide, with 1-inch buckles. Bits to be wrought-iron, japanned, bright-mouth, jointed; to weigh 7 pounds to the dozen. One chin-chain 10 inches long, of No. 8 iron, short twisted links, with S-hook at each end and 1½-inch ring in center. One coupling-strap 6½ feet long, 1 inch wide, with 1-inch buckle. Two pairs chain-pipes 2 feet 10 inches long, 2½ inches wide.

Two pairs trace-chains, 7 feet long, 14 links to the foot, No. 2 iron, twisted, with hooked T on one end; weight 10 pounds per pair.

One pair breast-chains, 28 inches long, 14 links to the foot, of No. 2 iron, twisted. Two neck-straps, 3 feet 5 inches long, 2½ inches wide, with 2½-inch buckle.

Two neck-chains, 4 feet 6 inches long, 14 links to the foot, twisted No. 4 iron, T and loop to be riveted on to the neck-strap; swivel in the chain.

One saddle, made on tree of the kind known as "Morgan," the head and gullet in one piece, (solid fork;) to be covered in the usual manner with raw-hide; leather flaps running under the tree, and extending 6 inches below the girthing D; three girthing-straps (1¼) one and one-quarter inch wide each, one running across the tree in front of pommel to the D on the opposite side, another around the pommel to the D's on each side, and the other from the same D's to the extension of the bar behind the cantle, all fastened to the tree with brass screws, one lacing-strap on each side from the D's, (1¼) one and one-quarter-inch wide, (3) three feet long, tapering to a point; one hair girth (18) eighteen inches long, (4) four inches wide at the middle; a (2½) two and one-half-inch ring on each end.

Stirrup-leathers, (2) two inches wide, (5) five feet long, with (2) two-inch buckles. Fenders or leg-guards (17) seventeen inches long, (6½) six and one-half inches wide at the top, (8½) eight and one-half inches wide at bottom. The fenders to be removable at pleasure.

Heavy wooden stirrups, (4) four inches wide on bottom; two rivets.

Lead.

Four bridles, to be same as for wheel-harness.

Four hair collars, to be same as for wheel-harness.

Four neck-straps and chains, to be same as for wheel-harness.

Four belly-bands, to be same as for wheel-harness.

Four pairs chain-pipes, to be same as for wheel-harness.

Four pairs trace-chains, to be same as for wheel-harness.

Four pairs hames to suit, same material as for wheel-harness; ironed, with hooks, breast-rings, and line-rings, with straps, as in wheel-harness.

Four cruppers and hip-straps.—Back-strap 6 feet long, tapering from 3½ inches to 2½ inches wide. Hip-straps, with buckles, each 2 feet 8 inches long, 1½ inch wide, with 3-inch rings, and a small open ring or S-hook to attach it to trace-chain.

Four back-bands, 3 feet 7 inches long, 3½ inches wide.

One martingale, 4 feet long, 1½ inch wide—to buckle into bit.

Three coupling-straps, 5 feet 6 inches long, ¾ inch wide.

One check-line, 4 feet 1 inch long, 1 inch wide—to buckle into the bit at each end, with a ring sewed in the center to receive the lead-line.

One jockey-stick, to be of hickory, split with the grain, not sawed, 4 feet 6 inches long, with chains; a T at end of one chain and a snap at the end of the other; chains to be 10 inches long, of No. 8 iron.

One lead-line, 30 feet long, 1 inch wide, with a buckle on one end and an 8-inch loop at the other.

Two lead-line rings, 3 inches in diameter, to be attached by a leather strap 12 inches long, 1 inch wide, with buckle—one to the line-ring in the near hame of the near swing horse, the other to the back-strap, over hip-strap of the near lead horse—the lead line to pass through these two 3-inch rings.

One bearing-chain, 4 feet long, 14 links to the foot, of No. 4 iron, twisted, with a 1½-inch ring in middle of chain and a hooked T on each end.

One whip—black-snake pattern, 5 feet 6 inches long, 1½ inch diameter at the butt.

The whole, except jockey-stick, to be packed in a box 21 inches wide, 23 inches deep, and 36 inches long, iron or wood hoops, as may be required.

The whole to be made of the best material, oak-tanned leather, sewing to be done with good waxed thread; and in addition, the quilors, belly-bands, choke-straps, back-bands, cruppers and hip-straps, chain-pipes, and neck-straps to have one No. 9 copper rivet and burr between each two rows of stitching.

All buckles used to be of japanned, malleable, barrel pattern.

The whole to be subject to inspection during process of manufacture and also when finished.

(724, Q. M. G. O., 1875.)

SPECIFICATIONS

OF THE SIZE, ETC., OF

FOUR-HORSE U. S. ARMY WAGON HARNESS.

PREPARED BY BOARD OF ARMY OFFICERS CONVENED AT PHILADELPHIA, PA., BY S. O. NO. 12, WAR DEPARTMENT, A. G. O., 1875, AND APPROVED BY THE SECRETARY OF WAR MARCH 4, 1875.

WHEEL.

Two quilors.—Breech-straps 3 feet 8 inches long, 3½ inches wide, sewed into 4-inch rings of ⅜-inch iron. Hip-straps 4 feet long, 3 inches wide. Stay pieces 2 feet 2 inches long, 3 inches wide, with 1½-inch buckles. Cross-straps to buckle into stay pieces 6 feet long, 1½ inch wide. Side-straps 5 feet 6 inches long, 1½ inch wide. Tie-straps 15 inches long, ½ inch wide, tapering to a point at both ends.

Two belly-bands.—Long side 2 feet 4 inches long, 2 inches wide, with a 2-inch buckle; short side 1 foot 6 inches long, 2 inches wide.

Two hair collars, 19 to 21½ inches long, (measured inside the rim,) with one 1¼-inch buckle, with single strap and safe-leather, and to be high-peaked. Two pairs strong hames to suit, made of white-oak root, ironed, with hooks. Breast-rings 1½ inch square. Staples and line-rings.

Two pairs hame-straps.—Lower one 5 feet 6 inches long, ½ inch wide; upper one 4 feet 6 inches long, ½ inch wide, of alum-tanned leather.

Two choke-straps, 3 feet 4 inches long, 2 inches wide; 2-inch roller buckles; billet 20 inches long.

Two bridles.—Crown-piece 2 feet 2 inches long, 1¾ inch wide. Cheek pieces each 10 inches long, 1 inch wide, (cut 34 inches long to form billets for bits.) Front pieces 12½ inches long, 1 inch wide. Stay-pieces, from blinds to crown pieces, 16 inches long, 1½ inch wide. No nose-piece. Blinds 10 inches long, 5¼ inches wide in the swell; to be half-oval shaped. Reins, long side 4 feet 2 inches long, 1 inch wide; short piece 2 feet long, 1 inch wide, with 1-inch buckles. Bit to be wrought-iron, japanned, bright-mouth, jointed; to weigh 7 pounds to the dozen.

One chin-chain, 10 inches long, of No. 8 iron, short twisted links, with **S**-hook at each end and 1½-ineh ring in center.

One coupling-strap, 6½ feet long, 1 inch wide, with 1-inch buckle.

Two pairs chain-pipes, 2 feet 10 inches long, 2½ inches wide.

Two pairs trace-chains, 7 feet long, 14 links to the foot, No. 2 iron, twisted, hooked **T** on one end; weight 10 pounds per pair.

One pair breast-chains, 28 inches long, 14 links to the foot, of No. 2 iron, twisted.

Two neck-straps, 3 feet 5 inches long, 2½ inches wide, with 2½-inch buckle.

Two neck-chains, 4 feet 6 inches long, 14 links to the foot, twisted, No. 4 iron, T and loop to be riveted on to the neck-strap; swivel in the chain.

One saddle, made on tree of the kind known as "Morgan," the head and gullet in one piece, (solid fork;) to be covered in the usual manner with raw-hide; leather flaps running under the tree, and extending 6 inches below the girthing D; three girthing-straps (1¼) one and one-quarter inch wide each—one running across the tree in front of pommel to the D on the opposite side, another around the pommel to the D' on each side, and the other from the same D' to the extension of the bar behind the cantle, all fastened to the tree with brass screws; one lacing-strap on each side from the D', (1¼) one and one-quarter inch wide, (3) three feet long, tapering to a point; one hair girth (18) eighteen inches long, (4) four inches wide at the middle; a (2½) two and one-half-inch ring on each end.

Stirrup-leathers, (2) two inches wide, (5) five feet long, with (2) two-inch buckles. Fenders on leg-guards, (17) seventeen inches long, (6½) six and one-half inches wide at top, (8½) eight and one-half inches wide at bottom. The fenders to be removable at pleasure.

Heavy wooden stirrups, (4) four inches wide on bottom; (2) two rivets.

Lead.

Two bridles, two hair collars, two neck-straps and chains, two belly-bands, two pairs chain-pipes, two pairs trace-chains, all to be the same as for wheel-harness.

Two pairs hames to suit, same material as for wheel-harness; ironed, with hooks, breast-rings, and line-rings, with straps, as in wheel-harness.

Two cruppers and hip-straps.—Back-strap 6 feet long, tapering from 3½ inches to 2½ inches wide. Hip-straps, with buckles, each 2 feet 8 inches long, 1½ inch wide, with 3-inch rings, and a small open ring or S-hook to attach it to trace-chain.

Two back-bands, 3 feet 7 inches long, 3½ inches wide.

One martingale, 4 feet long, 1½ inch wide—to buckle into bit.

One coupling-strap, 5 feet 6 inches long, ⅞ inch wide.

One check-line, 4 feet 1 inch long, 1 inch wide—to buckle into the bit at each end, with a ring sewed in the center to receive the lead-line.

One jockey-stick, to be of hickory, split with the grain, not sawed, 4 feet 6 inches long, with chains; a T at end of one chain and a snap at end of the other; chains to be 10 inches long, of No. 8 iron.

One lead-line, 21 feet long, 1 inch wide, with a buckle on one end and an 8-inch loop at the other.

One lead-line ring, 3 inches in diameter, to be attached by a leather strap 12 inches long, 1 inch wide, with buckle to the back-strap over hip-strap of the near lead horse—the lead-line to pass through this 3-inch ring.

One whip—black-snake, 5 feet 6 inches long, $1\frac{1}{2}$ inch in diameter at butt.

The whole, except jockey-stick, to be packed in a box about 21 inches wide, 18 inches deep, 34 inches long, wood hoops or iron, as may be required.

The whole to be made of the best materials, (oak-tanned leather,) sewing to be done with good waxed thread; and in addition, the quilors, belly-bands, choke-straps, back-bands, cruppers and hip-straps, chain-pipes, and neck-straps to have one No. 9 copper rivet and burr between each two rows of stitching. All buckles used to be of japanned, malleable, barrel pattern. The whole to be subject to inspection during the process of manufacture, and also when finished.

(724 Q. M. G. O., 1875.)

SPECIFICATIONS

OF THE SIZE, ETC., OF

FOUR-MULE AMBULANCE HARNESS.

PREPARED BY BOARD OF OFFICERS CONVENED AT PHILADELPHIA, PA., BY PARAGRAPH 3, S. O. NO. 264, WAR DEPARTMENT, A. G. O., 1875, AND APPROVED BY THE SECRETARY OF WAR APRIL 19, 1876, FOR EXPERIMENT, AS MODIFIED BY THE QUARTERMASTER GENERAL, JANUARY 10, 1878, AFTER TRIAL, AND APPROVED BY THE SECRETARY OF WAR JANUARY 15, 1878.

WHEEL.

Two bridles.—Crown pieces 2 feet long, 1⅝ inch wide, split so as to form straps to receive buckles of cheek pieces ⅞ inch wide, and buckles of throat-latches ¾ inch wide; chape on top buckle to receive winker-stay and face piece, and rein-ring 1½ inch in diameter, of No. 7 iron.

Throat-straps, 1 foot 6 inches long, ¾ inch wide, ¾-inch buckle on each end.

Front pieces, 1 foot 4 inches long, ⅞ inch wide, with 1⅝-inch "U. S." rosette on outside.

Cheek pieces, 8 inches long, ⅞ inch wide, ⅞-inch buckle on upper ends, and a ring of No. 6 iron, 1¼ inch in diameter, on lower ends.

Blinds or winkers, 5½ inches square, $\frac{5}{16}$ inch thick, 1¼-inch "U. S." ornament on each.

Blind or winker-stays, 1 foot two inches long, 1¼ inch wide, split 7 inches

Face pieces, scalloped, 1 foot 11½ inches long, 1¼ inch wide, split 10½ inches.

Bit-straps, 10 inches long, ¾ inch wide, with ¾-inch buckles.

Bits—wrought-iron, japanned, bright-mouth, jointed, loose rings, to weigh from 7 to 8 pounds per dozen.

Long reins, 4 feet 6 inches long, ⅞ inch wide; billet 9 inches long, with ⅞-inch buckle.

Short reins, 1 foot 10 inches long, ⅞ inch wide, with ⅞-inch buckle on one end and 9-inch billet and ⅞-inch buckle on the other.

Rein-straps, 8 inches long, $\frac{3}{4}$ inch wide, with $1\frac{1}{2}$-inch No. 7 iron ring sewed into one end, and 7-inch billet, with $\frac{3}{4}$-inch buckle, on the other end.

Two hair collars, black leather, 18 to 21 inches long, with chapes.

Two pairs hames.—Oak wood, screw-back, 21 inches long from center of loop to top hame-strap holes; $\frac{7}{8}$ inch thick on back, 2 inches wide at shoulder, with iron plate on back $\frac{1}{8}$ inch thick; breast-rings of No. 2 iron, 2 inches in diameter; rein-rings of No. 7 iron, 2 inches in diameter, with staples; iron loop on lower end for straps; clips for traces of $\frac{3}{8}$-inch iron.

Four hame-straps, 1 foot 10 inches long, $\frac{7}{8}$ inch wide, with $\frac{7}{8}$-inch buckles.

Two breast-straps, 5 feet long, $1\frac{1}{2}$ inch wide, $1\frac{1}{2}$-inch buckles, with good strong snap.

Two choke-straps, 2 feet 6 inches long, $1\frac{1}{2}$ inch wide; $1\frac{1}{2}$-inch buckle on one end, and billet 1 foot 8 inches long, with $1\frac{1}{2}$-inch buckle, on the other.

Four traces, 5 feet 2 inches long, $1\frac{3}{4}$ inch wide, $\frac{1}{2}$ inch thick, three-ply solid leather, one row of stitching all around; traces to be attached to hame-tugs—the other end of traces to be fitted with Concord toggles for attachment to whiffletrees.

Four hame-tugs, 16 inches long, with a $1\frac{3}{4}$-inch collar or loop-buckle of $\frac{3}{8}$-inch iron, with two (2) loops—one (1) to receive the back-strap tugs and the other to receive the belly-band; the hame-tugs to have three (3) small loops $1\frac{3}{4}$ inch wide to receive the end of trace and side-strap.

Two back straps, 3 feet long, $1\frac{1}{2}$ inch wide, with $1\frac{1}{2}$-inch D-ring sewed on each side at lower end of housing; housings scalloped, 1 foot 6 inches long, $4\frac{1}{2}$ inches wide, and bound with red enameled leather; top pieces of solid leather, 9 inches long, $\frac{3}{4}$ inch wide, to hold crupper in place. Four $\frac{7}{8}$-inch brass ornaments on each.

Four back-strap tugs, 7 inches long, $1\frac{1}{2}$ inch wide, three-ply, to fasten into loop on buckle of hame-tug, and with $1\frac{1}{2}$-inch buckle to receive back-band.

Two belly-bands.—Long side 2 feet 3 inches long, $1\frac{1}{2}$ inch wide; $1\frac{1}{2}$-inch buckle, with chafe $9\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches wide. *Short side* 1 foot 5 inches long, $1\frac{1}{2}$ inch wide.

Two breech-bands.—Bodies folded, 3 feet 4 inches long, $2\frac{1}{2}$ inches wide, with $1\frac{3}{4}$-inch ring on each end; layers 3 feet 4 inches long, $1\frac{1}{2}$ inch wide, stitched on.

Cruppers.—Bodies 5 feet long, $1\frac{1}{2}$ inch wide, with a 2-inch ring at end into which to sew the hip-straps; a safe-leather to be under this ring.

Breeching-straps, 2 feet long, 1 inch wide, with 1-inch buckle.

Hip-straps, 4 feet long, $1\frac{3}{4}$ inch wide, split 18 inches, with $\frac{7}{8}$-inch buckles looped in, to be sewed into the ring at end of crupper body, and to buckle into tugs 7 inches long, which are to be sewed to the breech-band.

Four side straps, 5 feet long and 1¼ inch wide; one end sewed into the breech-band ring and the other end to be attached to buckle on hame-tug.

One pair double lines, 27 feet long, 1 inch wide, with checks 5 feet 8 inches long; billets 9 inches long, and 1-inch buckles.

Two neck-straps, 3 feet 1 inch long, 2½ inches wide, with 2½-inch buckles.

Two neck-chains, 4 feet 6 inches long, twisted No. 4 iron, 14 links to the foot, with loop riveted into neck-strap with 4 copper rivets and burrs; T on other end; two stationary and one sliding ring. Weight, 6 pounds per pair.

LEAD.

Two bridles.
Two collars.
Two pairs hames.
Four hame-straps.
Four traces.
Four hame-tugs.
Two back-straps.
Four back-strap tugs.
Two belly-bands.
Two cruppers.
Two neck-straps.
Two neck-strap chains.

Same as for wheel-harness, (the bridles without rein-rings and rein-straps,) except that the bodies of the *cruppers* are to be 4 feet long, 1½ inch wide, with billets 2 feet long, 1½ inch wide, 1½-inch buckles, and round docks to buckles on one side, with ⅞-inch buckle.

Two carrying straps, 5 feet long, 1¼ inch wide, 1¼-inch buckles, looped up to carry the traces.

Two standing martingales, 4 feet 2 inches long, 1½ inch wide, split 18 inches, with billets 9 inches long, and ¾-inch buckles.

One pair double lines, 50 feet long, 1 inch wide, with checks 5 feet 8 inches long and billets 9 inches long, and 1-inch buckles.

WHIP.

Stock, hickory, split with the grain (not turned) and neatly dressed.
Lash, 9 feet long, of buckskin, eight-plat.

All to be made of the best material throughout; leather to be the best No. 1 oak-tanned; buckles to be of malleable iron, japanned, barrel-pattern roller-buckles; rings to be malleable iron, japanned; sewing to be done with good waxed thread, eight stitches to the inch.

QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., January 10, 1878.

(1439, Q. M. G. O., 1876, with 1 of 1876.)
(See 235, Q. M. G. O., 1878, therewith.)

Weights of the various parts of the Four-Mule Ambulance Harness adopted by the War Department for use in the U. S. Army, January 15, 1878.

Number.	ARTICLES.	Wheel for 2 mules.	Lead for 2 mules.	Total weight.
		Pounds.	Pounds.	Pounds.
4	Bridles complete	[2] 6 1/16	[2] 6 2/16	13
4	Collars, two 20 x 13 in., two 18 x 11 in.	13 11/16	11 7/16	24 9/16
4	Hames with straps, tugs, and belly-band	17 6/16	17 6/16	34 12/16
8	Traces	10 3/16	10 3/16	20 6/16
4	Back-straps	2	2	4
4	Cruppers, two with carry straps and two with bodies and hip-strap attached.	2 13/16	3 1/16	6 8/16
2	Breech-bodies and breeching-straps attached	6 1/16	.....	6 1/16
4	Neck-straps and chains	8	8	16
2	Standing martingales	.....	1 1/16	1 1/16
2 pr.	Double lines	2 14/16	4 10/16	7 9/16
2	Breast-straps and snaps	2 8/16	.....	2 8/16
2	Choke-straps	1 11½/16	.....	1 11½/16
1	Whip complete	.....	.....	1/16
	Total weight	74 6/16	65 2/16	140 2/16

Respectfully submitted,

C. H. HOYT,
A. Q. M., U. S. A.

WAR DEPARTMENT,
Q. M. General's Office, March 31, 1879.

(1649 Q. M. G. O., 1879, with 5157 of 1877.)

GENERAL ORDERS
No. 17.

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
Washington, March 1, 1876.

The subjoined report of the Board of Officers appointed by Paragraph 3, Special Orders No. 264, December 27, 1875, from this office, embracing specifications as to size, age, &c., to govern in the purchase of mules and horses for Army use, has been approved by the Secretary of War, and is published for the information and guidance of all concerned, together with the "specifications for work-horses" appended thereto.

BY ORDER OF THE SECRETARY OF WAR:

E. D. TOWNSEND,
Adjutant General.

OFFICIAL:

Assistant Adjutant General.

PHILADELPHIA, PA., *February* 10, 1876.

The Board convened at Philadelphia, Pennsylvania, by virtue of Paragraph 3, Special Orders No. 264, War Department, Adjutant General's Office, dated December 27, 1875, having investigated the question "as to the advisability of any change or modifications in the existing regulations as to size, age, &c., of mules and horses purchased for Army use," and having read all the papers submitted in relation thereto, and having fully discussed and considered the subject, begs to submit the following

REPORT.

The Board is of the opinion that slight changes and modifications in the existing regulations as to size, age, &c., of mules and horses for Army use are advisable, and recommends that the following specifications be adopted and govern in the purchase of horses and mules:

Cavalry horses.—To be geldings, of hardy colors, sound in all particulars, in good condition, well broken to the saddle, from (15) fifteen to (16) sixteen hands high, not less than (5) five nor more than (9) nine years old, and suitable in every respect for Cavalry service.

Whenever it becomes necessary to purchase the half-breed horses of California or Southern Texas, the standard of height may be reduced to not less than fourteen and a half (14½) hands.

Artillery horses.—To be geldings, of hardy colors, sound in all particulars, in good condition, square trotters, well broken to harness, from (15) fifteen to (16) sixteen hands high, not less than (5) five nor more than (9) nine years old, and suitable in every respect for Artillery service.

Mules.—To be strong, stout, compact animals, sound in all particulars, in good condition, well broken to harness, not under (14) fourteen hands high, not less than (4) four nor more than (9) years old, and suitable in every respect for the transportation service of the Army.

For pack purposes the standard of height may be reduced to (13½) thirteen and a half hands, if the animal be in other respects suitable. The pack-mule need not necessarily be broken to harness.

D. H. RUCKER, *Asst. Q. M. Gen.,*
Bvt. Maj. Gen., U. S. A., President.
H. M. BLACK.
Lieut. Col. 18th Inf., Bvt. Col., U. S. A.
W. B. ROYALL,
Lieut. Col. 3d Cav., Bvt. Col., U. S. A.
A. C. WILDRICK,
Capt., 3d Art., Bvt. Lieut. Col., U. S. A.
J. G. C. LEE, *Capt. and Asst. Q. M.,*
Bvt. Lieut. Col., U. S. A., Recorder.

Specifications for Work-horses.

When work-horses are to be purchased, they should be sound in all particulars, fifteen and one-half hands high and upwards, strong built, well broken to work in harness, not less than four nor more than nine years old.

INSTRUCTIONS

FOR USING

MOORE'S IMPROVED PACK-SADDLE.

COMPILED,

UNDER THE DIRECTION OF THE CHIEF QUARTERMASTER,
DEPARTMENT OF THE MISSOURI,

BY

CAPTAIN H. W. LAWTON,
FOURTH U. S. CAVALRY.

PUBLISHED BY AUTHORITY OF THE WAR DEPARTMENT.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., January 28, 1881.

The following instructions for using Moore's Improved Pack-saddle, compiled, under the direction of the chief quartermaster, Department of the Missouri, by Captain H. W. Lawton, Fourth Cavalry, U. S. A., are, by the authority of the honorable the Secretary of War, published for the information of the Army.

M. C. MEIGS,
Quartermaster General, Bvt. Maj. Gen., U. S. A.

(4446, Q. M. G. O., 1880.)

PREFACE.

Moore's Improved Pack-saddle is the result of thirty years' intelligent effort to combine all the advantages of the Mexican aparejo and the American pack and riding saddles; and it is believed to be the best that is made.

It has the advantages for the animal in carrying heavy loads that are possessed by the aparejo, while it can be successfully used by almost any one.

The following directions for its use, with the accompanying plates, if carefully followed, will bring the knowledge of packing within the reach of all interested.

The saddle is simply a modification, and intended to take the place of the aparejo; and when not "full rigged" is used with the same appliances. The instructions for packing the aparejo apply, therefore, in almost every particular, to the saddle; and a great portion of what follows is copied from Moore's pamphlet of "Instructions for using the Aparejo."

MOORE'S IMPROVED PACK-SADDLE.

ADVANTAGES OF THE PACK-SADDLE.

It is always ready for use, while it takes an expert to prepare and fit an aparejo, and requires his constant care to keep it in order.

It is hardly possible to transport aparejos, other than on the animals' backs, without some of them getting "broken down," so that they will have to be overhauled before they are fit for use.

The saddle is lighter and allows the animal greater freedom of action than does the aparejo.

The saddles cost 33 per cent. less, are less liable to damage from handling or exposure, will last as long, and can always be repaired by a saddler or harness-maker.

DESCRIPTION OF SADDLE.

For the convenience of officers responsible for the saddle, and to avoid complication, everything necessary to equip an animal completely for carrying a pack is comprised under the head of *pack-saddles*. The pack-saddle, then, consists of the *saddle proper; two pads*, corresponding with the pads of the aparejo, laced on each side of the saddle to the skirts and at the upper edges over the top; a *crupper*, similar to the aparejo crupper, but lighter, laced to the rear edges of the saddle skirts; a *corona*, or *pad*, used under the saddle and next the animal's back; a *manta*, or *pack cover*, two pieces of canvas 7 feet long and 22 inches wide, stitched together along their long edges; *halter* and *strap; cinch* of canvas 10 inches wide, and in length according to the size of the animal; *sling-rope*, best hand-laid manila whale line ($\frac{1}{2}$ inch) 20 to 32 feet long; *lash-rope* with *leather cinch*, same as above ($\frac{5}{8}$ inch), 42 feet long, and one *blind* to each five packs.

When the saddle is "full rigged," as it is called—that is, supplied with sling-straps and cargo cinch—the sling and lash-ropes are dispensed with.

BLANKET, MARKING, ETC.

It should be borne in mind that each animal must wear the saddle that is fitted to it, and some arrangement is necessary to mark the saddle. The usual method is to make a corona of blanket, 26 by 48 inches, with a border and center facing, which forms a part of the blanketing, and always goes with the saddle, and is not to be used for any other purpose.

By cutting out figures or numbers of sufficient size, and of such colors as will show plainly, and sewing them on the corona in the space between

the back or center facing and the end, as shown in Plate 1, and when the saddle is fitted to the animal, cutting numbers in the hair on the left side of the animal's neck (see Plates) to correspond with the numbers on the corona, the identity of each saddle with the mule to which it is fitted will be established.

It is well to mark the saddle pad with paint or pencil with the corresponding number, as a clue to where the corona belongs should it be blown off or otherwise displaced.

Take three thicknesses of common blanket, 26 inches wide and 40, 42, and 44 inches long, called underpinning, and a piece of light canvas 22 by 36 inches (the pieces are not of equal length in order not to form a too abrupt termination); stitch these pieces to the under side of the corona after the corona is completed, the canvas on the outside next the animal's back.

The adopted pattern of pack-saddle blanket, specifications for which are hereinafter contained, answers every purpose for the saddle blanket proper and should be folded—first, to one-half its length, then to one-third its width. A better blanket would be one of equal or heavier texture to that described, 46 to 50 inches wide and 6½ to 7 feet long, folded to one-third its length and placed on top of the corona.

The following are the specifications for the adopted pattern of pack-saddle blanket:

Each blanket to be 7 feet long and 5 feet 6 inches wide, and to weigh 5 pounds; to be gray in color, and be made of pure long-staple wool, free from shoddy, reworked wool, cotton, or any impure materials. To have in the center the letters "U. S." 4 inches long, and under them the letters "Q. M. D." 2½ inches long, in scarlet; to bear a strain of not less than 25 pounds per inch for the warp and thirty pounds per inch for the woof without tearing, and to have not less than 22 threads of warp and 25 threads of filling or woof to the inch. The threads to be well driven up. The stripes at the ends of blanket to be 4 inches wide, and be scarlet yarn dyed with pure cochineal.

NOTE.—It is immaterial whether the letters "U. S. Q. M. D." be stamped on the blanket or woven into the fabric; their color must be of pure cochineal die.

MULES SHOULD BE BLINDED.

In putting on the rigging, while loading or readjusting the packs, the animals should always be blinded. Each packer is supplied with a blind for this purpose.

The blind also answers as a whip. (See Plate 2.) Great care should be taken to train the mules to stand perfectly quiet when the blind is on.

They should never be led or forced to move without first raising the blind from their eyes. An animal is never broken until it can be ap-

proached with almost anything while blinded. If the animal stands up before the lash-rope is laid and throws the load, delay is caused and possibly the packages are broken and stores are lost.

FITTING SADDLE TO ANIMAL.

The manner of fitting this saddle to the animal is similar to that of an ordinary riding saddle. Adjust the length of crupper by lengthening or shortening the lace string which attaches it to the saddle skirt. Care should be taken not to draw the crupper too tight; the saddle is so constructed that it may work 1½ inch farther forward than the ordinary saddle.

If the pads are not square, draw the screws, unlace them from the skirt, square and fit them to the animal; try by placing cinch, passing it immediately over the diaphragm, the front edge touching the breast bone; thence exactly in the center of the lower end of the pads; screw the pads to the saddle bars before removing cinch; uncinch and lace the pads in the original manner.

Regulate the length of the cinch and crupper.

The cinch C, Plate 3, is of sufficient length to reach entirely around the animal; pass the ring end over the saddle from left to right, fasten the "latigo" or cinch-strap, which is attached to the other end of the cinch, allowing the ring end of the cinch to come up on the lower end of pad, as shown in Plate 4.

PUTTING ON SADDLE.

Lay the corona in place, 2 to 2½ inches ahead of where the saddle is to work. Place the blanket proper on top of corona. Take the saddle by both yokes and place it square in position, a little farther back than it is intended to work. After the crupper is placed carry the saddle gently forward and cinch as directed.

LOADING CARGO.

The loads are put on in better shape by working three men together than by working two; and no time is lost on rough, and but little, if any, on smooth loads.

The accompanying diagrams show the saddle spread out and fronting bottom of page; and by their assistance the several directions the lash-rope (which should be 42 to 45 feet long) takes to get its proper bearing on the load will be explained.

In loading, No. 2 unties the mule, leads it out with left side to cargo, and puts on the blind. No. 1 takes the sling-rope (this should be from 20 to 32 feet long, according to size of pack) by the center, and passes the loop over the saddle from left to right sufficiently to allow it to pass around the load and come back within reach of No. 1, dividing the rope 6 to 12 inches. Nos. 2 and 3 take the part of the load that is intended for the

right side of the pack and lay it on top of the saddle; No. 3 holds it in place; No. 2 passes around to the other side and grasps the loop of the sling-rope in the right hand; he allows the load to settle slightly to his side, brings the rope up against it, and lets the loop drop over his shoulder, but holds on to it ready to pass.

TYING SLING-ROPE.

Nos. 1 and 3 now take the remaining part of the pack and place it well up on the saddle, on the flat side, lapping the upper edge well up on the first half of the load; No. 1—the one who works with his back to the animal's shoulder—takes the end of the sling-rope that comes down in front, reaches up and gets hold of the loop, and passes the end down through with the right hand. He now passes the left hand (with the thumb down and back of the hand up) under the right arm and on top of the hanging part of the rope that is held in the right hand, picks up the other end of the rope on thumb of the left hand, and carries the left hand up to the right without changing or turning it over. Press down on the part of the rope that is held in the right hand with the heel of the left; let go with the right hand, and it will be seen that the ropes are in a natural position to be tied in a square knot, with a bow, and without moving the left hand. Tie up close. It is very easy to let the rope out if tied too close; but if the sling-rope is tied too long the packs will come down on the side and will have to be lifted and the work done over again.

When the rope is tied, No. 1 says "*settle*"; each grasps his side of the pack by the lower corners and lifts up and out, settling the upper edges well together and balancing the load well on the saddle. While Nos. 1 and 2 have been tying the sling-rope and adjusting the load, No. 3 has straightened out the lash-rope and placed the cinch in front of No. 1 and passed the end of the rope to the rear of the animal convenient to No. 2; No. 1 now grasps the rope three feet above the cinch with the right hand and passes the hook under the mule; No. 2 picks it up in the left hand; No. 1, simultaneously with passing the cinch to No. 2, grasps the rope with the left hand three feet above the right and raises it to the center of the load and lays it fore and aft between the side packs. He now pulls the rope E, Fig. 1, Plate 5, forward until the rope *a* Fig. 1, is long enough to reach over to the hook E F. He now has the standing part of the rope A, Fig. 1, in the right hand, palm up, the part E E, Fig. 1, resting on the wrist D, Fig. 1; he now heaves the loop over the pack to No. 2; the standing part A is made to pass directly over the center of the pack (see Fig. 2), and E E is allowed to fall in front of the pack on the animal's neck. (See Fig. 2.) No. 2 passes the rope A A, Fig. 2, through the hook E F, Fig. 2; No. 1 grasps the rope at H, Fig. 2, and carries it to H, Fig. 3; E E is now brought up to the center of the pack immediately in front of the

standing part A A, Fig. 4. No. 2 reaches with the left hand up to G, Fig. 4, and pulls the rope down until the hook renders round to near the center of the belly; it should be so that, when tightened, the hook will come to the bottom of the saddle; No. 1 now grasps the rope at G, Fig. 4; No. 2 takes the end M, Fig. 3, and passes it over A A and under E E in the center of pack (see Fig. 4), and lets the end drop on No. 1's side of the animal. No. 1 now forces the section of rope between G and H, Fig. 4, down under the corners and end of the pad, and hauls taut at H, Fig. 5; No. 2 grasps the rope at I, Fig. 4, with the left hand and at K with the right, and passes K to L, Fig. 4, and brings it down to K, drops the loop O, Fig. 4, under the corners and end of pad from K to L, and hauls taut at L, Fig. 5; No. 1 takes in the slack at M, Fig. 5. The rope is now ready for

FINAL TIGHTENING.

No. 2 takes the mule by the head, raises the blind off his eyes, and leads gently forward a few steps; No. 1 passes to the rear and examines the pack as the animal moves off to see that it is properly adjusted. The blind is again dropped over the eyes; No. 2 grasps the rope E E at E F, between the bottom of the pad and the hook, placing the right hand below the left and the right knee against the rear corner of the pad; No. 1 grasps the rope E at E, Fig. 5, on the left side with the right hand, and between N. and G, Fig. 5, with the left hand, and says "*pull*"; placing his shoulder against the pack to steady it, he takes in the slack as No. 2 tightens; No. 2 should take in one steady pull and give in slack without allowing the rope to render back through the hook. When No. 2 says "*enough*," No. 1 holds solid with right hand, slips the left down to G, and holding fast passes the right hand to H, Fig. 5, and pulls taut; now disengages the left hand, passes it to H, and grasps the rope with both hands, places the right knee against the rear corner of the pad and pulls well home. No. 2 grasps the rope at I with both hands and takes in the slack; No. 1 steps to the front, takes hold of the pack and steadies it, while No. 2 takes a good, strong, steady pull, drawing the rope A A well back in the center of the pack; No. 2 now runs the left hand down to K, and holding the rope firm passes the right to L and pulls in the slack; he now grasps the rope with both hands at L, places the right knee against the front corner of the pad and pulls well home; No. 1 grasps the rope at M, Fig. 5, and pulls all solid, drawing the rope E E well forward in the center of the pack. He now brings the rope M to G, and carries it on under the corners and end of the pad to H; he now brings the end forward and makes it fast by passing it under the rope A A from the front at P, Fig. 5, draws tight and ties with a half hitch. If the rope is long enough to reac: over the load, it is not made fast on the near side, but is

brought down to G and carried to H, as before; pull forward and pass over the center of the load to No. 2, who makes it fast by passing the end twice under both ropes A and E, from the front at the lower edge of the load, say at Q, Fig. 6; draw the two ropes A and E well together, and again pass the end under E, from the front below where the first two turns have been taken, and draw up snug; it will not need to be tied.

It will be seen, by observing the diagrams and their explanation, that A A is the first standing part of the rope, that E E is the second standing part, and that to *tighten the rope on the load* it is necessary to pull up and out on E E at E F, and take in the slack at H by pulling on the section of rope between N and G; pull back at H and again back at I, Fig. 5; forward at L, and down and forward at N.

To slacken the rope on the load.—Loosen it at P or Q, cast the end to the near side; No. 2 grasps the rope at R and pulls down and forward to L; pulls back and up at K; No. 1 pulls down at S, up from G to N, and slackens the turn at N; now the rope is slack and the load can be easily trimmed.

To *tighten up*, see instructions for *final tightening*.

When it is necessary to cover the load, the cover is put on before the lash-rope; when not required on the loads, they are folded a convenient size and carried on the saddle under the cinch. The same disposition is made of tenting.

When side packs are not of equal size and weight, the largest or heaviest should be put on the near side; it can then be lapped up on the off-side pack until the load balances.

The sling-rope should never be crossed except on round loads, such as barrels, kegs, &c., or when top packs have to be carried. The last should be avoided whenever practicable.

When the sling-rope has to be crossed, throw the ends of the rope over the saddle from left to right, leaving enough of the loop on the left side to reach up to the top of the side packs. When the off-side pack is in place, throw the ends of the rope over the pack and let them hang down on the near side; No. 2 takes the loop, and when the near-side pack is in place passes it to No. 1 over the top of the pack; No. 1 ties as directed in article on tying sling-ropes. The surplus ends of the sling-rope are doubled up and stored away under the sling rope on top of the pack.

It is sometimes advisable on long or loose loads to give the sling-rope a double bearing. To do this, pass enough of the loop of the sling-rope to the right side of the animal to allow it to be thrown back over the load with rope enough to tie in front and rear, making virtually two sling-ropes. The sling-rope may be half hitched into the yokes of the saddle, making the load more secure, but with greater danger of hurting the animal's back.

UNLOADING CARGO.

Two men are all that are required to unload an animal. In taking the packs off, the designation of the men will be the same as when loading, No. 1 takes the left side of the animal, No. 2 the right; one of the two catches the animal and leads it with its head to the center of where the cargo is to be piled. (See instructions for slackening the rope, with the following additions:)

No. 2 pulls the end M back and out from under the part E E, Fig. 6; this takes out the only knot in the rope; No. 2 removes the section of rope from L to K from under the corners and end of the pads and takes the rope at K, and the parts A and E in the left hand at G, unhooks the cinch with the right hand; No. 1 has removed the section of rope from G to H, from under the corner, pulled out the turn at N, holds the rope at H, and the two pads A and E in the left hand at P. No. 2 passes the rope to No. 1; No. 1 runs his right hand along the ropes and gathers all three parts in the right hand at Q; he now brings both hands together, right hand on top, and lays the rope as coiled on the ground where he intends to put the load, and leaves the cinch and end of the rope out on the side opposite where the rigging is to be placed. No. 1 unties the sling-rope and casts it loose, takes his half of the pack and lays it on the rope and across the proposed line of cargo; No. 2 holds on to the sling-rope, and when he has laid his part of the pack on No. 1's half he doubles up the sling-rope and lays it on top of the load, and leaves the loop exposed, so that the rope can be taken by the center when required.

The second load is placed end to end with the first, and on the side next to where the rigging is to be placed, leaving the cinch and end of the lash-rope out on that side, stacking the cargo on top of the rope as before.

When the loads are all off, the end of the last rope that is left out is coiled up and placed on top of the sling-rope on the cargo, and is used to tie the animal with when brought up for reloading.

The cinches should, if possible, be slackened and the animals allowed to cool before the saddles are removed. The saddles are then taken off and placed in line, resting on the lower ends of the pads.

In removing the saddle unfasten the "latigo," or cinch-strap, and throw the end across the saddle on top of the cinch, pull the cinch to the left until the ring end is brought to the center on the off side; place the hand on the center and fold back the "latigo" or strap end, leaving the latigo in the folds of the cinch; push the saddle back, lift the crupper from under the tail and double it forward, leaving the dock to rest on top of the cinch in the center of the saddle. Remove the saddle as before instructed; place the blanketing on top of the saddle.

COMPANY AND OTHER PACK TRAINS.

Companies of cavalry should be supplied with a train of at least twelve mules each.

The animals should be carefully selected with a view to their fitness for carrying packs, and, with the whole equipment, should be a part of the company property and remain permanently with it. By this means a number of animals can be kept constantly in training for this kind of work, and can be consolidated into larger trains in case of necessity.

While it is important to use the animals only at their legitimate work, in order that they may be always in suitable condition, still they need not be altogether unavailable for other service.

A cavalry company requires a team for its routine work all the time, and the pack animals can be used for this purpose, besides performing their regular pack duties, and could be utilized about a post in case the regular wagon train was required on the road, or could be put in wagons in case the company should move with a train, and at the same time be ready and in training in case they were needed for packing.

When in camp or garrison, loads of bags or sacks of corn, equal in weight to the loads they are to carry while on the march, should be prepared, and the company packers and mules kept in training by frequent drills.

A good non-commissioned officer, who has a faculty and liking for the duty, should be put permanently in charge and kept with the train, with three men as packers, who should be changed from time to time that as many may learn as possible.

When there are not a sufficient number of mules to form pack trains independent of the wagon trains, and where an emergency requiring pack trains is anticipated, a pack train can be organized in each wagon train.

Select the mules intended for the purpose and fit each with a saddle. While in camp or post have loads prepared of logs of wood 26 inches long (see Plate 6), or sacks of corn, equal in weight to the loads that the animals are intended to carry, double sacked and lashed solid, so that there will be no danger of breaking the sacks, and keep the men and mules as constantly in training as possible. A wagon train intended to be used in this manner should have a bell horse and the animals trained to follow it.

There should be 12 men with 50 packs. Teamsters whom it is intended shall do the packing should mess together, and be supplied with mess kit and mess boxes suitable for packing; and to insure efficiency it would be well when teamsters are ordered on duty as packers to raise their wages to the rate given regular packers.

PREPARING SADDLE FOR TRANSPORTATION AND STORAGE.

Turn the crupper forward on top of the saddle between the yokes; then

turn the saddle upside down; fold the cinch to one-third of its length and lay it between the pad; fold the corona to half its size and lay on top of cinch; fold pack cover to half its width, then to one-third or one-fourth its length, and lay on top of corona. Then take the sling-rope and lash up solid, first lengthwise of saddle, then transversely. (See Plate 7.)

The saddle blanket proper may be folded a convenient size and packed between the corona and pack cover and lashed up with the saddle, or they may be baled by themselves.

The lash-ropes should be coiled, each by itself, the coil to be about 12 inches in diameter (see Plate 7) and sacked, and the sacks labeled with the number contained in each. Make the same disposition of head halters and straps. If the saddles are only temporarily packed away, that is, if they are already fitted to the animals and will probably be taken out and worked as fitted, it is well to make the pads with numbers corresponding with those on the coronas.

When put away in store, place the saddles on foot of pads and allow no heavy weights on top of them. If they are in careful hands and stored where there is no danger of parts of the saddle being carried off, the first saddle may be placed astride a beam or joist, the several parts placed on top of it (see Plate 7), and on top of this others in the same manner.

THE "FULL-RIGGED" SADDLE.

For carrying "square" or plain loads, and for use in the hands of inexperienced persons, sling-straps and the cargo cinch may be used. The saddle is then fitted to the animal's back by a cinch of heavy canvas 10 inches wide and 3 feet long, attached to a "spider" on the saddle in the usual manner. (See Plate 3.) The packs are laid on the saddle as before prescribed, and are held in their positions by the "sling-straps," and secured to the animal by the cargo cinch—made of heavy canvas 10 inches wide—and so constructed that it can be readily lengthened or shortened, according to the size and shape of the packs. (See Plates 3 and 8.)

This arrangement is simple in the extreme, and can be manipulated by any one.

If this method is used both the lash-rope and sling-rope are dispensed with; but there is no arrangement equal to the lash-rope and sling-rope when their manipulation is thoroughly understood.

GENERAL REMARKS.

PREPARING AND PACKING STORES.

The rations being the most important part of the loading of a pack train should be put up in light packs and carried on the best mules.

When an expedition is probable, a sufficient number of rations to load the train should be put up in proper shape to pack, and stored in the commissary or carried on the wagon train. All should be carefully weighed

and plainly marked, so that they can be loaded quickly and also issued in bulk.

Put the salt, sugar, coffee, and beans into 100-pound packages, double sack with gunnies, and lash them solid.

One animal should not be loaded entirely with either of the above-named articles; but each package should be put against a sack of flour, that, in case a cargo is lost, it will not be all of the most valuable part of the rations.

The bacon should be put in 100-pound, net, packages; put from 5 to 8 pounds of clean dry hay in and around each package; sew up in double gunnies, lash up securely, and keep as dry and cool as possible.

Yeast-powder should be put up with some other articles, as nearly as possible into 100-pound packages, and packed against flour or bacon. The packages of yeast-powder should be opened and hay stuffed closely around the boxes, to prevent shaking consequent on handling and the motion of the animal from forcing the covers off the boxes and wasting the powder. Vinegar, soap, and candles are not usually carried on expeditions with pack trains.

Put up side packs from 100 to 125 pounds, to match in size, shape, and weight as near as practicable.

HAY PADS FOR ROUGH LOADS.

Small hay pads, 26 by 44 inches, may be carried and put under the cinch to keep long and rough loads off the animal's hips and shoulders. The rule to be observed in putting up packages is, for its width, once and one-half its thickness; for its length, nearly once and one-half its width; instance, 12 inches thick, 18 inches wide, and 25 inches long.

Make, when practicable, the highest loads of the bulkiest or of the most valuable stores.

When long and rapid marches are anticipated, animals weighing from 800 to 1,000 pounds should not be loaded much in excess of 200 pounds to the animal.

In ordering field service with a mixed command, or with infantry, a good, solid, compact mule, when well fitted and broken and properly handled, will carry, of solid freight, a load equal to 30 per cent. of its own weight.

Each pack should be supplied with two layers of $\frac{3}{8}$-inch rope, 18 to 28 feet long, for lashing side packs, and each pack mess with two mess boxes 11 inches deep, 18 inches wide, and 26 inches long—outside measurement—dovetailed $\frac{7}{8}$-inch lumber; no lids or facings to be lashed when packed in a pack cover. (See Plate 9.)

A company with its own pack train should have four of these boxes.

The pattern of head halter shown in Plate 2 has advantages over all others and is recommended.

See Plate 10—saddle packed with sling and lash-ropes.

APPENDIX.

The following "Instructions for packing the Hotchkiss Mountain Gun" have been furnished by Lieut. F. H. French, Nineteenth Infantry, and are published in this connection.

In addition to the outfit necessary for packing other articles, the following are needed for the Hotchkiss mountain gun and ammunition, viz: pads, ammunition chests, and two boards connected along their longest edges by small ropes. The pads, Fig. 7, Plate 11, are used to raise the load so that the mule shall not be struck by that portion of the load projecting to the rear. They are made of canvas and filled with hay or straw; when filled they should be as broad as the pack-saddle, 3 feet 6 inches long and from 4 to 6 inches thick. The hay or straw is introduced through a slit in the top of the pad, the edge of the slit being provided with eyelets through which a cord may be drawn to close the opening. The pad is placed up on the saddle crosswise to the mule, the slit on top, and the cinch passes over it. The boards, Fig 1, Plate 11, are used with the gun and carriage only. They are placed between the pad and saddle, lengthwise with the mule, so as to balance each other on the opposite sides of the saddle. The weight of the gun and carriage soon compresses the pad to such an extent that, without the boards, the load is lowered until the rear portion strikes the mule. They also prevent the clamps on the bottom of the carriage from wearing the saddle.

Each is as long as the saddle is broad, 11 inches broad, and 1 inch thick. They are made of pine or other light wood. There are two sizes of ammunition chests; the smaller is used with the wheels and shafts, the larger alone. They are made of pine or other light wood. Each of the smaller size is 2 feet long, 5 inches broad, and 11 inches thick. They may be made from a single block of the proper length and breadth and 10 inches thick, or from several pieces of board of the proper length and breadth, glued together along their broad sides so that the whole shall be 10 inches thick. Twenty-two holes $1\frac{3}{16}$ inch in diameter, extending through the whole thickness, are made in two parallel rows. A board 2 feet long, 5 inches broad, and 1 inch thick is then glued on, having holes corresponding to those in the main piece but with a diameter of $1\frac{1}{8}$ inch, which are to hold the conical part of the shells.

The whole box is then covered with leather or canvas. The covering of the top is in the shape of a flap, which is secured by three straps to buckles on the side of the chest. Instead of a sling-rope, two straps, each one inch and three-fourths wide, are used to hold these chests in place while the lash-rope is being tied. These straps pass in the form of loops around the chests near their ends. The running portion of each strap

passes through a leather loop riveted to the other portion, so as to make the loop fit securely around the chest. Each chest is furnished with the buckle end of one strap and the billet of the other, so that each packer has to buckle one strap in packing, and the operation of unpacking is quickened. The buckle should rest on top of the pad when the straps are buckled together. When the gun is drawn by the shafts the ammunition chests can be carried on top of the trail, and are held in place by running the straps around the trail. The chests used on mules, carrying ammunition only, are made in the same manner, but have three parallel rows of holes with fifteen holes to a row. Either the straps, as above explained, or the sling-rope can be used with these chests.

Before packing, the gun, elevating screw, and the wheels are detached from the carriage. The screw, with the linch-pin and washers, is carried in a leather pouch, which is fastened by a strap and buckle to the brace between the cheeks of the carriage. The gun and carriage constitute one load; the wheels, shafts, harness, and two small ammunition chests with shells another; while other mules carry ammunition only, each carrying two of the large chests with 90 shells.

The gun is covered with a canvas cover to exclude dirt and moisture. It is placed lengthwise with the mule, on the near side, the sights up, the base of the breech on a line with the front edge of the pad. It should be as near the top of the saddle as the axle of the carriage will permit, the carriage being placed lengthwise on the opposite side and one axle projecting on the top of the saddle. The clamps by which the axles are secured to the carriage should rest on the front edge of the pad. The gun and carriage are then connected by the sling-rope, the front part of which passes over the cap-squares. Care should be taken to have them well balanced, as their respective weights are nearly the same, and a little displacement of either in packing will cause an entire change in the whole load on the march.

After the sling-rope has been tied, take off the blind and lead the mule a few steps, when any fault in the position of the load can be readily seen and remedied. The load is then secured by the lash-rope. Two packers are required to put this rope on. The girth is thrown under the mule from the near side by the packer on this side to the other packer, who grasps it in his left hand, holding the end of the rope in the same hand, the rope passing around behind the mule. The first packer then throws a loop over the gun so as to include its whole length in the loop, the latter being made from that portion of the rope to the rear of the mule. He then forms another loop from the rest of the rope and throws it over the whole load to the second packer, who engages it with his left hand in the hook so that the latter rests well under the saddle. The standing part, or that part of the loop to which the girth is attached, should be in front of the other part of the loop, called the running part.

The first packer, after throwing the second loop, carries with his right hand that portion of the first which is in front of the gun to the rear over the gun, at the same time holding the standing part to the left with his left hand, so that the part carried back shall not go around it. By this, the running part is engaged by the part running to the rear. The second packer at the same time runs the end of the rope under the standing part and throws it in front of the gun to the first packer. The latter passes the running part under the standing part and under the saddle, taking care to get it well under the corners of the saddle. The rope is now ready to be tightened. This is done by the second packer drawing the standing part through the hook, taking care that the latter is not displaced. At the same time the first packer, grasping that portion of the running part which passes under the standing part with his right hand, takes in the slack as it comes from the other.

By taking a turn around the hand the rope is held much more securely and the slack can be retained in a better manner.

At an intimation from the second packer of all the slack being taken up, the first frees his hand from the rope, being careful to hold it taut all the time, and pulls it tight under the saddle. After this he retains a secure hold until the second packer has drawn all the slack over to his side of the saddle. This being done, the second packer runs the rope well under the edge of the saddle on his side without allowing it to slacken. It then passes from the front corner of the saddle over the upper axle and around the standing part, and is drawn tight by the first packer. The latter then runs the rope under the saddle as before, holding it taut all the time, and throws the end over to the second packer, then draws the rope as tight as possible by bracing one foot against the saddle, and then carries it under the rear corner of the saddle and over the lower axle around the rope running in front of the carriage and back over the axle, and secures it to any of the other ropes on his side of the load. The object of taking it around the front rope is to take the slack out of that rope by pulling on that part which comes back over the axle.

To pack the wheels, they are first connected at one point by a small rope passing around the tires. They are then raised from the rear and one is placed on each side of the saddle. The connecting rope should be at the highest point of the wheels, the dish on the inside, and the hubs resting on the upper part of the pad. They should be raised until the lowest part of the wheels is above the board near the edges of the saddle. In this position they are connected by the sling-rope, the loop of which passes under the hub on the off side. The rope then passes through the wheel on that side under the hub, over the pad, through the other wheel below the hub, and is fastened in the form of a loop under this hub. It is advisable to have a rope of the proper length tied before putting on the

wheels, as then the two loops will be made and can be slipped over the hubs with a saving of time. After the sling-rope has been fastened the lowest part of the wheels should not be below the boards at the edges of the saddle. This is necessary to secure a good hold under the saddle for the lash-rope.

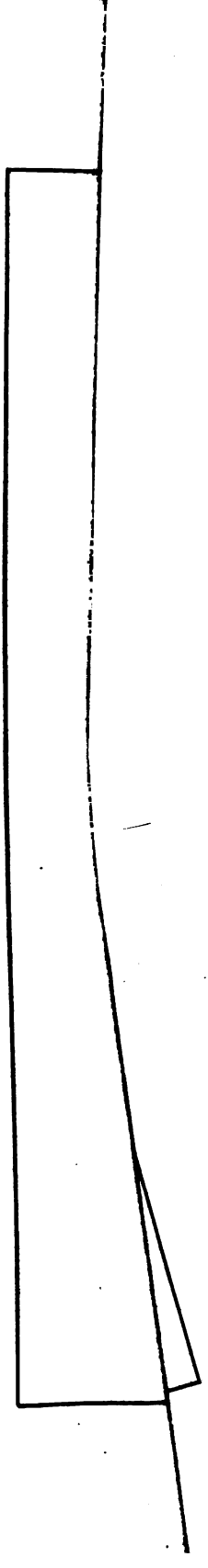
Take off the blind and lead the mule a few steps to correct faults in the position of the load. The ammunition chests are then put on the outside of the wheels close below the hubs, the straps and buckles on the outside. They are held in their places by the large straps which pass through the wheels and buckle on top of the pad. The shafts are then placed over the wheels, the branches resting on the hubs and projecting to the rear, the bars resting on the tires above the mule's neck. This bar should be so high that the mule in moving his head will not strike the shafts. The load is then secured by the lash-rope. The packer on the near side throws the hook as before to the second packer, who grasps it in his left hand. The first packer then passes a loop from that portion of the rope nearest the girth, through the wheels, over the chests and the mule, to the second packer, who seizes it with his right hand and engages it in the hook. The running part is then drawn under the standing part and well under the edge of the saddle from front to rear. The first packer then passes the end of the rope under the rear part of the wheel, around the standing part on top of the mule, and over to the second packer. The latter draws the rope over to his side as far as necessary, and then passes it under the edge of the saddle and front of the wheel, around the running part on top of the mule, and over the bar of the shafts to the first packer. The rope is then tightened, as explained for the gun. After the slack has been secured to the point above reached the first packer carries the rope under the edge of the saddle, taking care to allow no slack, and from the rear corner of the saddle through the wheel and over the chest from rear to front.

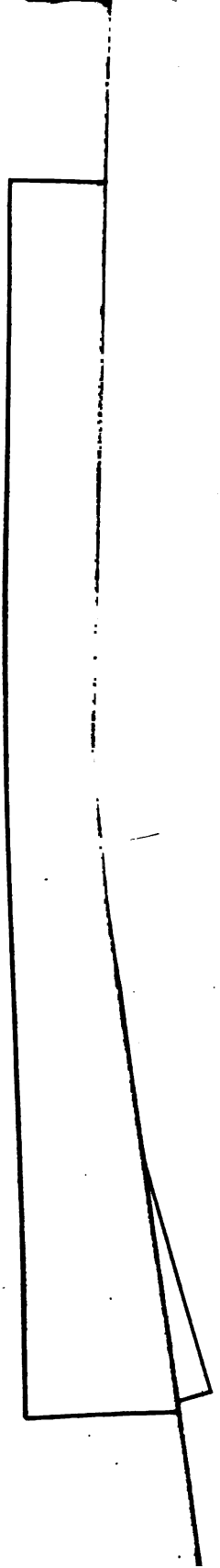
In case the chests are not used the rope passes from the rear corner of the saddle over the lower part of the wheel, but not through it. It is then passed around the rope coming from the bar of the shafts and drawn back tight to take all the slack out of this rope. This packer then hands the end of the rope to the other, passing it over the chest and his branch of the shafts, and through the wheel in rear of the hubs. The second packer, holding the rope taut, takes a half turn around the tire and branch of the shafts, and then secures the end to other portions of the rope.

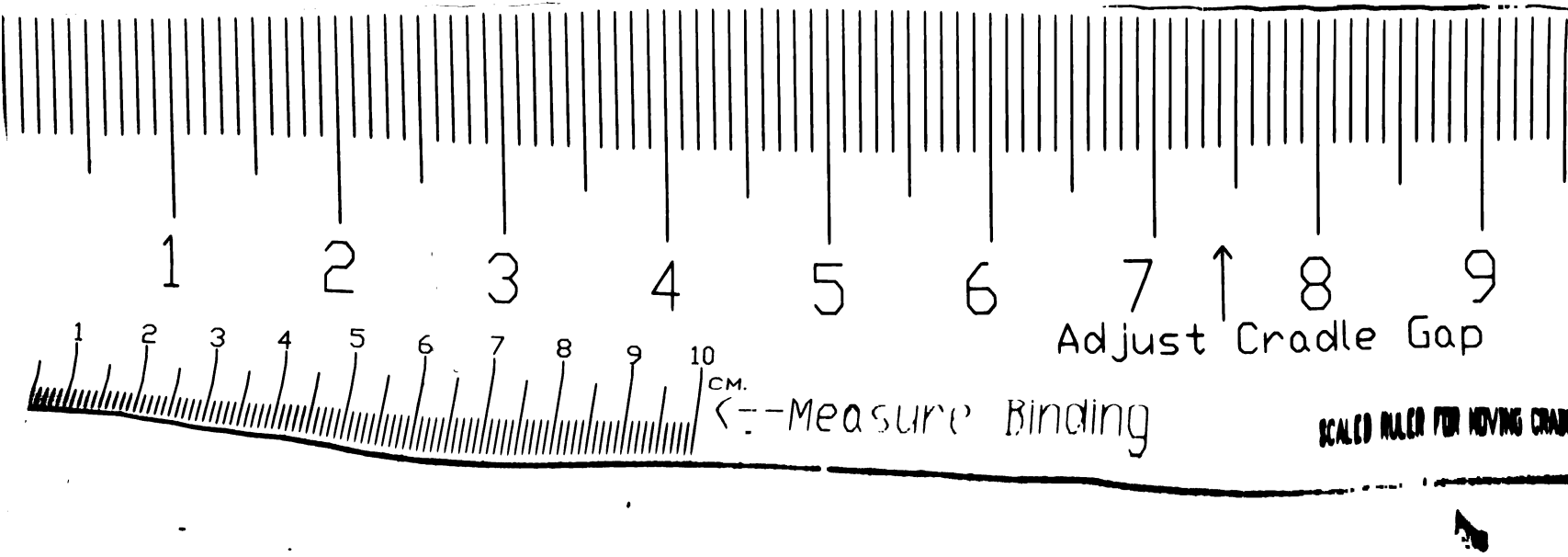
The large chests are packed in the same way that boxes and sacks of grain are; one is placed on each side of the pad. They are held in this position by the sling-rope or by the straps so that they balance each other, and are then secured by the lash-rope. With the straps the chests can be adjusted on the saddle and the straps buckled, and it will be unnecessary to unbuckle them in unpacking or repacking; they can be raised from the rear and carried forward to their proper places.

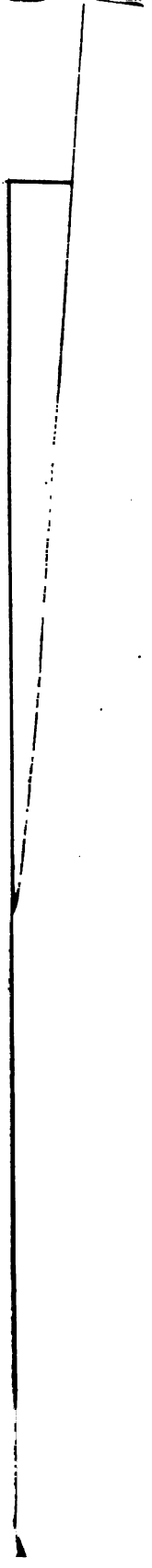
The use of the small ammunition chest with the wheels and shafts is not recommended, as the load without them is considered sufficient on long and rapid marches over rough country, and other animals should be used for ammunition only.

See Plates 12 to 17, inclusive—saddles packed with ammunition in chests, gun and carriage, and wheels and shafts.









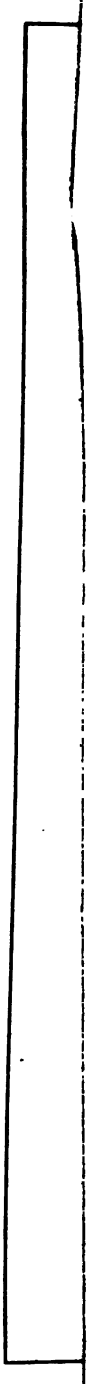
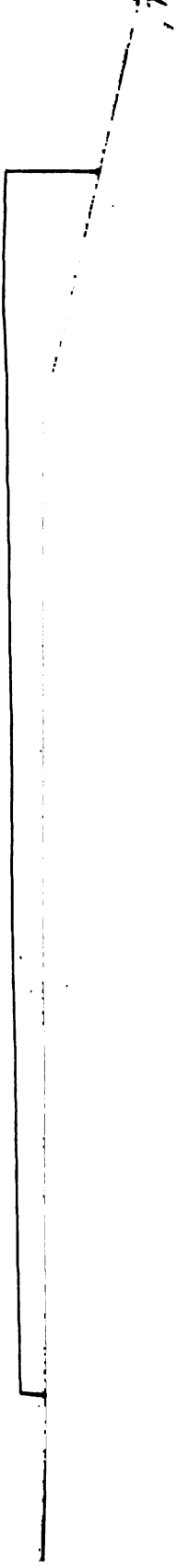
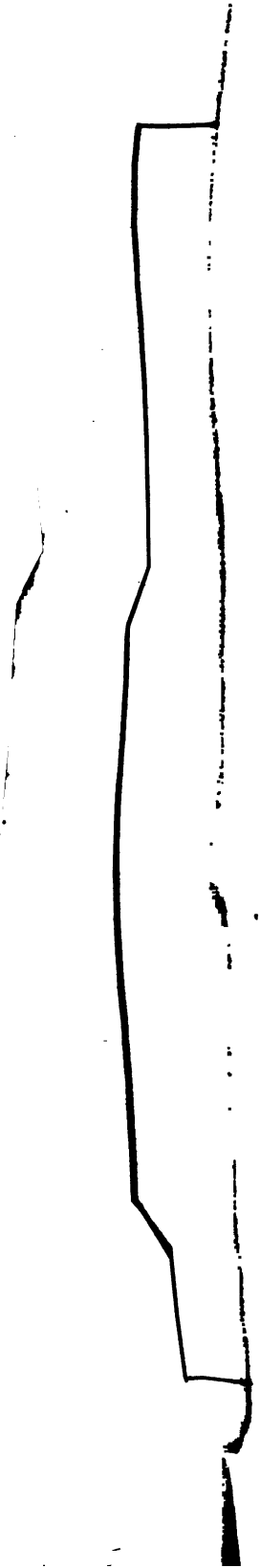


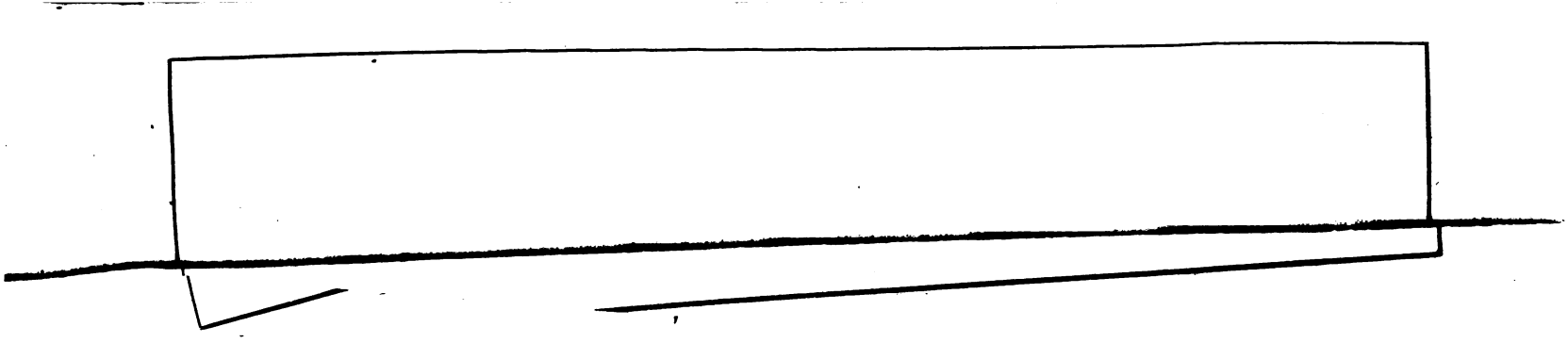
Plate 5.

Fig. 5.

Fig. 6.







WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, January 28, 1881.

SPECIFICATIONS FOR PACK-SADDLE BLANKETS.

Each blanket to be seven (7) feet long and five (5) feet six (6) inches wide, and to weigh five (5) pounds; to be gray in color and be made of pure long-staple wool, free from shoddy, reworked wool, cotton, or any impure materials; to have in the center the letters "U. S." four (4) inches long, and under them the letters "Q. M. D." two and a half (2½) inches long, in scarlet; to bear a strain of not less than twenty-five (25) pounds per inch for the warp and thirty (30) pounds per inch for the woof without tearing, and to have not less than twenty-two (22) threads of warp and twenty-five (25) threads of filling or woof to the inch; the threads to be well driven up; the stripes at the ends of blanket to be four (4) inches wide and be scarlet yarn, dyed with pure cochineal.

NOTE.—It is immaterial whether the letters "U. S. Q. M. D." be stamped on the blanket or woven into the fabric; their color must be of pure cochineal dye.

(223 Q. M. G. O., 1881.
Filed with 6882, Q. M. G. O., 1879.)

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, January 31, 1880.

SPECIFICATIONS FOR SADDLE BLANKETS.

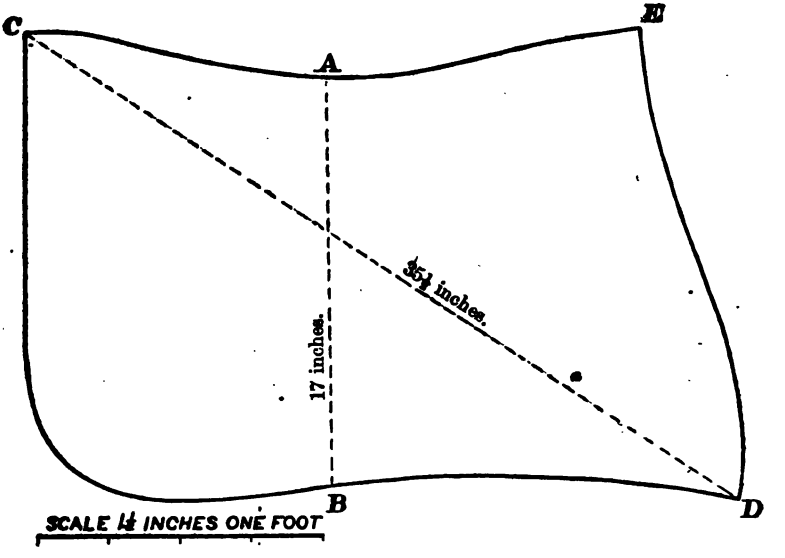
The saddle blanket to be that known as the Spencer's graduated, No. 1.

Size.—Size when folded to be as follows: Length of line A B, upon diagram below, to be seventeen (17) inches, and of line C D thirty-five and one-half (35½) inches.

Thickness.—Thickness (when outspread) at C not less than five-eighths (⅝) inch, at E one-half (½) inch, graduated to a thickness of one-quarter (¼) inch at lower edge.

Weight.—Weight to be not less than two (2) pounds three (3) ounces.

Shape.—To be shaped as per diagram.



(6882.—Q. M. G. O., 1879.)

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, January 31, 1880.

SPECIFICATIONS FOR HORSE BLANKETS.

Material.—Material to be of all-wool kersey, gray ground and fancy plaid.

Size.—Extreme length, seventy-two (72) inches. Depth at hips, thirty-six (36) inches.

Weight.—Weight to be not less than five (5) pounds.

Breast-straps—To have two (2) breast-straps of best quality oak-tanned russet leather, properly spaced; to be nine (9) inches long and one (1) inch wide, secured by two (2) tinned rivets one (1) inch apart; the billets and loops to be two and one-half ($2\frac{1}{2}$) inches long, exclusive of buckle, secured in same manner as straps.

Buckles to be one (1) inch, and of the japanned malleable barrel-roller pattern.

Tail-cord.—To have tail-cord one-quarter ($\frac{1}{4}$) inch diameter, twenty-four (24) inches long.

Finish.—The blanket to be properly shaped and to be neatly and substantially faced under straps and billets with an additional thickness of kersey. To be trimmed with scarlet union binding and to have braided cloth pocket for surcingle.

(6882—Q. M. G. O., 1879.)

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, January 31, 1880.

SPECIFICATIONS FOR WAGON PAULINS.

Material.—Best quality No. 4 standard cotton duck, clear of all imperfections, 22 inches wide; to be manufactured of long-staple American cotton; to be free from sizing; the warp to contain not less than twenty-nine (29) and the filling not less than twenty-four (24) four-cord threads to the square inch.

Size.—Length, 16 *feet when finished;* seven widths of material.

Workmanship and finish.—Seams to have 1½-inch lap; ends to have 2-inch fold, neatly made and well secured at corners; all seams to be sewed with double thread of six-fold cotton twine, *well waxed,* and with not less than 2½ stitches to the inch.

To have 8 galvanized-iron grommets, ½ inch inside diameter, one at each corner, and one in center of each side and end.

Triangular stay-pieces at each corner 6 inches deep; 4-inch square stay-pieces under each side and end grommet; *arranged to come directly opposite each other;* to have one ⅝-inch manila rope, best quality, 5 feet long, neatly and thoroughly spliced into each grommet, one end to be well whipped with *well-waxed thread;* grommets to be placed in center of stay-pieces.

All work to be done in the best workmanlike manner.

Paulins to be stenciled "U. S." in center with 4½-inch black Doric letters, and with name of manufacturer.

(6882.—Q. M. G. O., 1879.)

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, January 31, 1880.

SPECIFICATIONS FOR PAULINS.

Material.—Best quality No. 4 *standard* cotton duck, 22 inches wide, clear of all imperfections, manufactured from long-staple American cotton; to be free from sizing; the warp to contain not less than 29 and the filling not less than 24 four-cord threads to the square inch.

Size.—Length, 30 *feet when finished;* 10 widths of material.

Workmanship and finish.—Seams to have 1¼-inch lap; ends to have 2-inch fold, neatly made and *well secured at corners;* all seams to be sewed with double thread of six-fold cotton twine, *well waxed*, and with not less than 2½ stitches to the inch.

To have ten galvanized-iron grommets, ½ inch inside diameter, one at each corner, one in center of each end, and two on each side equidistant from corners.

To have triangular stay-pieces at each corner 6 inches deep, and 5-inch triangular stay-pieces under each side and end grommet; all stay-pieces of 12-ounce cotton duck and *arranged to come directly opposite each other.*

To have a ⅜-inch manila rope, of best quality, 5 feet long, *neatly and thoroughly spliced* into each grommet, one end to be *well whipped* with *well-waxed* thread.

End and corner grommets to be placed in center of lap, side grommets in center of stay-pieces.

Paulins to be stenciled "U. S." in center with 4½-inch black Doric letters, and with name of manufacturer.

All work to be done in the best workmanlike manner.

(6882.—Q. M G. O., 1879.)

STOVES AND RANGES

FOR

ARMY USE.

SPECIFICATIONS, SUPPLY-TABLE, ETC.

[Q. M. G. O., MAY 25, 1876.]

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, May 25, 1876.

Under authority of the Secretary of War, who has approved the recommendations of the Board of Officers appointed by paragraph 2, Special Orders No. 68, War Department, Adjutant General's Office, dated April 17, 1875, "to meet at Omaha, Nebraska, on the 15th day of May, 1875, or as soon thereafter as practicable, to draw up and submit for the consideration of the Secretary of War specifications for cooking and heating stoves and ranges for Army use, and to prepare a supply-table, giving the number to be supplied for use of officers and of men in public quarters and barracks;" and who has approved the recommendations made by this Office in forwarding the Board's report for his consideration, the subjoined extract from the report of the Board, including the drawings of the stoves and ranges recommended for use, the supply-table, the orders appointing the Board, &c., and the papers (or extracts thereof) referred to in the report, embracing all that is material and necessary to a proper understanding thereof; and also the indorsements of this Office, and of the Adjutant General and Secretary of War, showing the action thereon, are hereby published for the information and guidance of officers of the Army.

M. C. MEIGS,
Quartermaster General,
Bvt. Maj. Gen'l U. S. A.

(4734, Q. M. G. O., 1875.)

REPORT.

OMAHA, NEBRASKA, *November 15, 1875.*

* * * * * * * *

After examining a great variety of patterns of heating and cooking stoves and ranges which were presented to the Board by different manufacturers and dealers from various localities, also heating and cooking stoves and ranges which are in use in the city of Omaha, and practically testing different patterns of cooking-ranges at Omaha Barracks—giving due attention to the letters, circulars, and price-lists from manufacturers and dealers, and other sources received by the Board—after mature and careful consideration of the subject submitted to them, in connection with letters from the War Department (Quartermaster General's Office), hereto attached, the Board respectfully recommend stoves and ranges similar to the following:

The heating-stoves and cooking-ranges are distinguished by the following names and numbers:

Army cast-iron wood heater, No. 1.
Army cast-iron wood heater, No. 2.
Army cast-iron wood heater, No. 3.

* * * * * * * *

Weight of No. 1, from 600 to 700 pounds; Nos. 2 and 3, from 900 to 1,000 pounds.

The No. 1 is described as follows:

To be made of first-class cast-iron.
Length of stove, 31 inches.
Width of stove, 13 inches.
Height of stove, 21½ inches.
Thickness of side plates, ½ inch.
Thickness of bottom, top, and front plates, ¾ inch.
Height of legs, 8 inches.
Size of door, 9 x 14 inches.
Size of pipe, 5 inches.

[NOTE BY THE QUARTERMASTER GENERAL'S OFFICE.—The size of the pipe to be 6 inches instead of 5 inches. Recommendation of the Quartermaster General in submitting report to Secretary of War. Approved by the latter.]

The sides of the stove are formed by three plates of equal dimensions and the same as the end plate; the longest edges of the side and end plates have a bevel of 45°, which renders any one of them interchangeable with any other, and are fastened at the top and bottom by eight half-inch round iron rods, the top by the knob of the rods, and the bottom by screws.

The door is held by a loose hinge, the base of which is attached to the front plate by screw-bolts; the hinge being loose, the door can be opened and shut without a movable latch.

The No. 2 is described as follows:

It is the same as the No. 1, with the following exceptions:
Length of stove, $51\frac{9}{10}$ inches.
Width of stove, $17\frac{8}{10}$ inches.
Height of stove, 24 inches.
Thickness of iron, $\frac{3}{4}$ inch.
Thickness of front plate, 1 inch.
Height of legs, 10 inches.
Size of door, 10 x 15 inches.
Size of pipe, 6 inches.

[NOTE BY THE QUARTERMASTER GENERAL'S OFFICE.—The size of the pipe to be 7 inches instead of 6 inches. Recommendation of the Quartermaster General in submitting report to Secretary of War. Approved by the latter.]

The No. 3 is described as follows:

It is the same as the No. 2, except that this stove has two doors and two hearths, and all the upright plates are interchangeable, and the stove-pipe hole is in the middle of the stove.

[NOTE BY THE QUARTERMASTER GENERAL'S OFFICE.—The size of the pipe to be 8 inches instead of 6 inches. Recommendation of the Quartermaster General in submitting report to the Secretary of War. Approved by the latter.]

For further explanations and details see drawings of Army wood heater, Nos. 1, 2, and 3, marked "I," "K," and "L."

The three wood-heating stoves above named are recommended for general use in the Army; they are durable and plain patterns, and the sides and end plates are interchangeable.

Nos. 2 and 3 are especially recommended for heating large rooms. No. 3, with two doors, it is believed possesses the advantage of burning fuel more evenly, and a trial of it is recommended. It is believed that each of the foregoing stoves should last in Army use indefinitely.

Army wrought-iron wood heater, No. 4.
Army wrought-iron wood heater, No. 5.

* * * * * * * *

The No. 5 is described as follows:

To be made of heavy wrought-iron.
Length, 4 feet 2 inches.
Width, 1 foot $6\frac{3}{4}$ inches.
Size of door, $12\frac{3}{4}$ x $12\frac{3}{4}$ inches.

The body is made of No. 10 wrought-iron, with ribs of $1\frac{1}{2}$ inch angle-iron riveted to the body, preventing the body from warping or bulging.

The bottom is round and holds several inches of ashes, protecting the iron and the floor from heat. The front of the stove, where the door hangs, is made of bar-iron forged, 3 inches wide by $\frac{3}{8}$ inch thick. The back end of the stool has three strips of wrought-iron 3 inches wide by $\frac{3}{8}$ inch thick, riveted on the outside, so that it is sufficiently strengthened against being struck by wood thrown into the stove. The hearth is made of heavy wrought-iron, and is hooked to the stove by a heavy wrought-iron catch, and it can be unhooked and placed inside the stove when shipped.

The No. 4 is described as follows:

Length, 30 inches.

Width, 12 inches.

Size of door, 9 x 9 inches.

Other description the same as Army wrought-iron wood heater, No. 5.

For further explanations and details see drawings of Army wrought-iron wood heater, Nos. 4 and 5, marked "M" and "N."

The above wrought-iron stoves are recommended to supply posts distant from the seats of manufacture and from the general depots and posts, reached only by long lines of wagon transportation. It is a very strong pattern; it being made of wrought-iron, it has greater capacity than a stove of similar weight made of cast-iron, thereby saving the transportation, and is not as likely to be broken as a cast-iron stove. It can also be repaired at a post by a blacksmith should it be required. It is believed that each of these wrought-iron stoves should ordinarily last in Army use from five to ten years.

Army cast-iron coal-heater, No. 6.

Army cast-iron coal-heater, No. 7.

* * * * * * * *

[NOTE BY THE QUARTERMASTER GENERAL'S OFFICE.—Weight about 275 pounds and 1,000 pounds, respectively.]

The No. 6 is described as follows:

Height of stove, 33 inches.

Diameter of stove, 15 inches.

Diameter of stove bottom, 16¼ inches.

Diameter of stove top, 16½ inches.

This stove consists of four parts, Nos. 1, 2, 3, and 4. No. 1 is $\frac{3}{8}$ inch thick; No. 2, $\frac{5}{8}$ inch; No. 3, $\frac{1}{2}$ inch; and No. 4, $\frac{3}{8}$-inch. Diameter of the grate 8 inches, and $\frac{1}{8}$ inch thick. Top and bottom, $\frac{3}{8}$ inch thick. The top of the stove is fastened to the bottom of the stove by three $\frac{1}{2}$-inch thick wrought-iron rods; the top of the rods by the knob of the rods, and the bottom by screws.

The No. 7 is described as follows:

To be manufactured of $\frac{3}{4}$-inch cast-iron.

Height of stove, 5 feet 7½ inches.

Diameter of stove, 20 inches.

Height of each cylinder, 13½ inches.
Size of doors, 8 x 10 inches.
Thickness of doors, ½ inch.
Thickness of grate, ½ x ¾ inch.
Thickness of bottom and top, ¾ inch.
Diameter of stove-pipe, 6 inches.
Diameter of grate, 18½ inches.

This stove consists of four cylindrical parts. The cylinders marked Nos. 1 and 3 and Nos. 2 and 4 are interchangeable. The grate is in two parts, (halves,) so that it can be readily removed; it rests on a ¾-inch ring or shoulder inside of the stove. The stove is fastened by three ½-inch thick wrought-iron rods, holding the top to the bottom; the top is fastened by the knob of the rods, and the bottom by nuts secured on to the end of the rods.

For further explanations and details see drawings of Army cast-iron coal heater, Nos. 6 and 7, marked "O" and "P."

The No. 6 is recommended for general use, and the No. 7 is especially recommended for use in barracks and other large rooms in cold climates. They are both adapted for the use of bituminous as well as anthracite coal, and it is believed that each of these stoves should ordinarily last in Army use from five to ten years.

Army parlor heater.

* * * * *

This stove is described as follows:

To be built of first-class cast-iron.
Height, 2 feet 7½ inches.
Width outside, 2 feet 2 inches.
Width inside, 18 inches.
Thickness of bottom and top, ¼ inch.
Thickness of outside mantel, ¼ inch.
Thickness of outside fire-mantel, ¾ inch, in fire-brick.
The opening for fuel can be covered by a sheet-iron blower.

This stove is intended to burn anthracite and bituminous coal, and can also be used for wood. It is recommended more especially for officers' use. It is believed that such a stove should ordinarily last in Army use about five years. See accompanying drawing of the above-described stove, marked "Q." This is considered by the Board as one among many of the very good patterns of open coal stoves, and do not consider it necessary to recommend any particular pattern as most suitable to be adopted.

Army cooking range, No. 1.

Army cooking range, No. 2.

* * * * *

No. 1 with mantel and trimmings.

* * * * *

No. 2 without mantel and with trimmings.

* * * * *

The No. 1 range is described as follows:

To be built of first-class wrought-iron, No. 0, with cast-iron top.

Top cooking surface, 2 feet 10 inches by 2 feet 3 inches.

Size of baking-oven, 1 foot 2½ inches by 1 foot 5¼ inches.

Size of warming-oven, 1 foot 4 inches by 1 foot 3½ inches.

Size of holes, 8 inches.

Size of galvanized iron water-tank, 40 gallons.

The back side and bottom are double-cased and filled with hydraulic cement.

The top consists of 13 loose pieces, and of 4 pieces fastened by screws to the side of the range.

× To prevent smoking the top rests on the water-tank in a layer of cement.

The covers of the cooking-holes are resting in ½-inch grooves.

The grate consists of 6 iron cast pieces.

The sides of the fire-place are protected by ½-inch cast-iron plates.

The water-tank is heated on the lower part of the side next to the inside of the range.

The oven doors are lined to avoid wasting heat.

The different sizes and measure of the range-doors, etc., are shown by the drawing.

The No. 2 range is described as follows:

The same as the No. 1 range, with the following exceptions:

Size of top cooking surface, 3 feet 7 inches by 2 feet 9 inches.

Size of baking-oven, 1 foot 4 inches by . foot 10½ inches.

Size of warming-oven, 1 foot 3 inches by 11½ inches.

Size of cooking-holes, 9 inches.

The top consists of 9 loose pieces, and 4 pieces fastened by screws to the sides of the range.

The grate consists of 5 iron cast pieces.

The following is a list of the trimmings for these ranges:

Tin trimmings:

1 wash-boiler.
1 coffee-boiler.
1 steamer.
1 tea-kettle, (iron or tin.)
3 bake-pans.
1 pot-cover.

$\frac{1}{16}$-inch cast-iron:

2 pots.
2 skillets.
2 griddles.
1 iron heater.

The changes and improvements made in "Miller Ranges" since 1885 are approved by the 2. M. Genl. see L.R. # 1215 of 1888. on file

cluding heating and cooking, than their allowance of rooms requires, say, for a lieutenant 2, for a captain 3, as a limit, and not these if the rooms have open fire-places, except in very severe climates; for a company of troops a cooking range sufficient to cook its food, two large stoves in the dormitory, one large stove in each mess-room and day-room, and one small stove for each of the two rooms for non-commissioned officers, and one small stove for the library, when there are no open fire-places or they are insufficient in very severe climates. These recommendations, as to the maximum allowance of the number of stoves for a company of troops, is based upon the arrangement and general plans of drawings of military buildings, recommended to the Secretary of War by the Board on Revision of the Army Regulations, published September 14, 1872. As, however, most of the barracks at present occupied by troops are not built in accordance with the drawings referred to, an absolute fixed allowance of stoves, based on those plans of barracks, would not always be applicable. The Board therefore recommend that a proportionate allowance of stoves be supplied in accordance with the foregoing. It is thought by the Board that the recommendations contained herein will meet all necessary requirements for heating-stoves and cooking purposes for the Army. The importance of a system being adopted by which the spare parts of stoves and ranges can be obtained on requisition to replace those rendered unserviceable or lost is too evident to require comment. Attention is also called to the fact that the sheet-iron in general use in the Army for stove-pipe is not heavy enough, as it soon rusts and burns out. The Board recommend that, when it is absolutelv necessary, each laundress be allowed to purchase

a single stove from the Quartermaster's Department at the invoiced price, when the same can be spared.

The accompanying supply-table for fixing the number of stoves for use of officers and men in public quarters and barracks is respectfully submitted. As far as practicable the Board has been governed by the suggestions contained in letter from Quartermaster General's Office, herewith, marked "D," and not recommended for adoption the stoves or ranges of any particular manufacturer. The heating-stoves, Numbers 1, 2, and 3, differ somewhat from any the Board has ever seen. Numbers 4 and 5 are similar to those advertised to be manufactured by Messrs. Van & Co., of Cincinnati, Ohio. Numbers 6 and 7 are similar to those manufactured by the Union Pacific Railroad Company, the Number 7 being somewhat altered. The Army Parlor Heater is known as the Harvard Stove. The ranges, Numbers 1 and 2, are similar to those manufactured by Messrs. Miller & Co., of Cincinnati, Ohio, the water-tank having been changed on the suggestion of the Board.

There being no further business before it, the Board then adjourned, November 15, 1875, *sine die*.

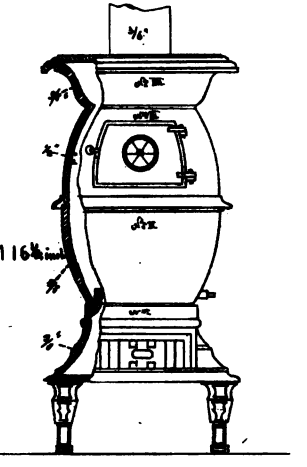
JEF. C. DAVIS,
Colonel 23d Infantry, U. S. A.
C. GROVER,
Lieutenant Colonel 3d Cavalry, U. S. A.
ALEX. J. PERRY,
Lieut. Col. and D. Q. M. General, U. S. A.
JAS. S. BRISBIN,
Major 2d Cavalry, U. S. A.
E. B. ATWOOD,
Captain and A. Q. M., U. S. A.

DIMENSIONS

HEIGHT 2 FEET 9 INCHES

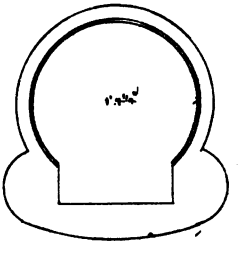
DIAMETER 15 INCHES

DIAMETER OF BOTTOM 16½ inch



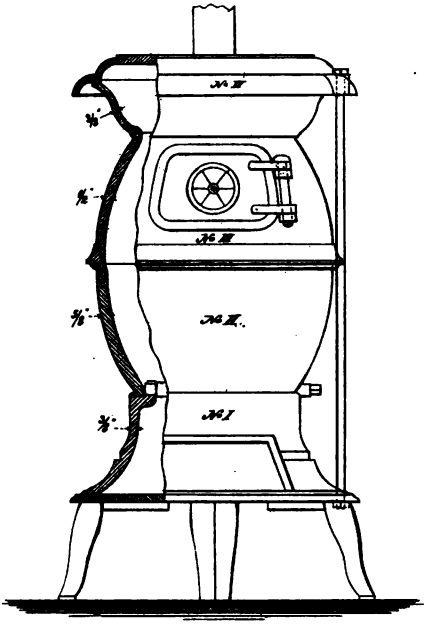
ARMY CAST IRON COAL HEATER.

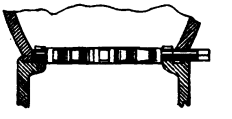
N° VI



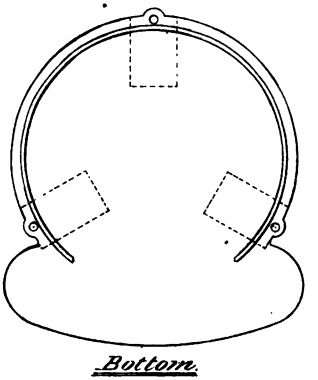
BOTTOM.

O.





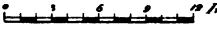
ARMY CAST IRON COAL HEATER Nº VI.

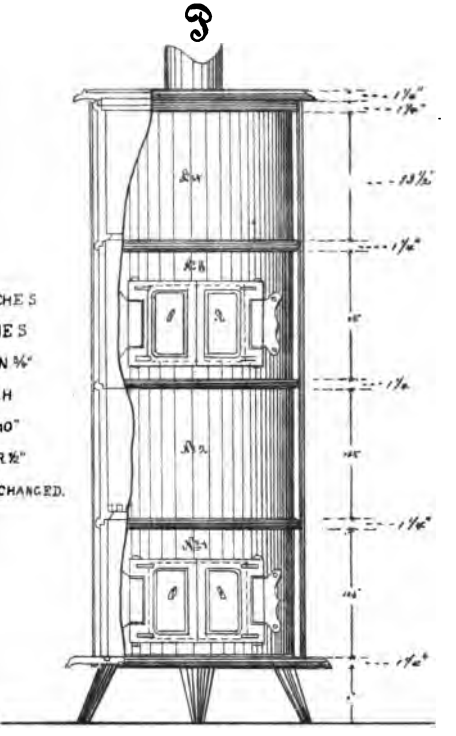


Bottom.

Plan View of Grate.

Scale:





DIMENSIONS:

HEIGHT 5 FEET 7½ INCHES

DIAMETER 20 INCHES

THICKNESS OF IRON ¾"

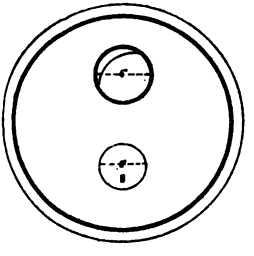
CYLINDERS 13½" HIGH

SIZE OF DOOR 8 x 10"

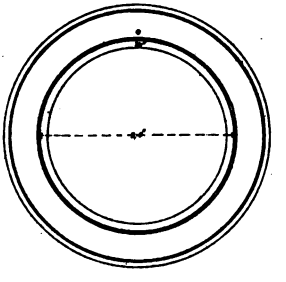
THICKNESS OF DOOR ½"

Nº 1 & 3, Nº 2 & 4 CAN BE CHANGED.

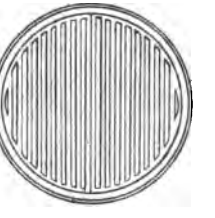
ARMY CAST IRON COAL HEATER. Nº VI



TOP.

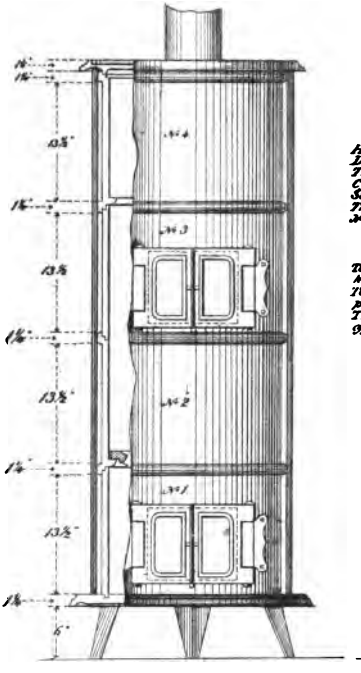


BOTTOM



GRATE.

P

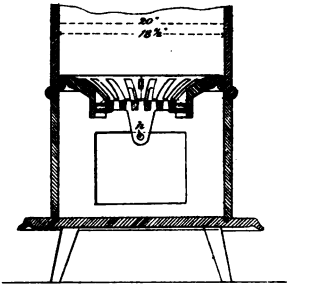


Dimensions

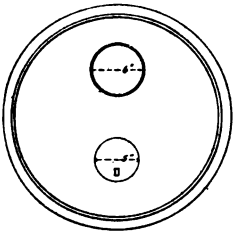
Height 5 Feet 7¾ Inches
Diameter 20 Inches.
Thickness of Iron ¼"
Cylinders 13½" high.
Size of Door 8" × 10"
Thickness of Door ½"
Nos 3, № 2 & 4 can be changed.

Note

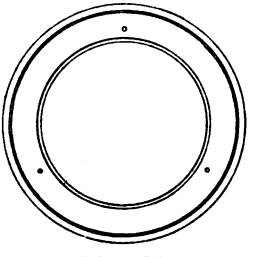
To shake the grate put the poker in the hole B & move the poker up & down. To remove Clinker push the revolving part of the grate till it stands vertical Then through the upper door push off clinker with the poker.



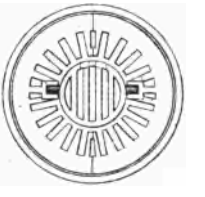
ARMY CAST IRON COAL HEATER. № VII.



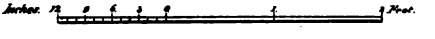
TOP.



BOTTOM.



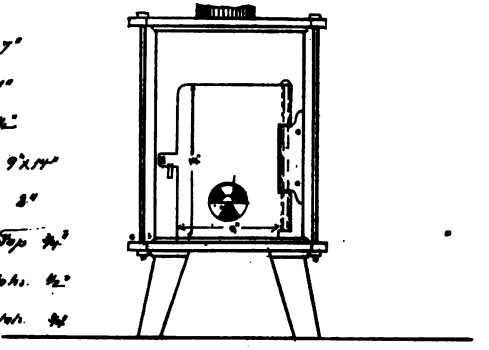
GRATE.

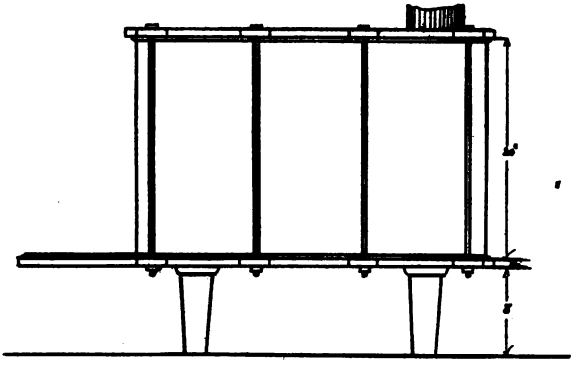


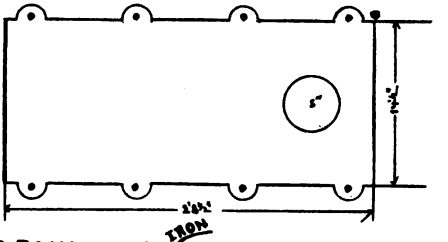
J.

DIMENSIONS

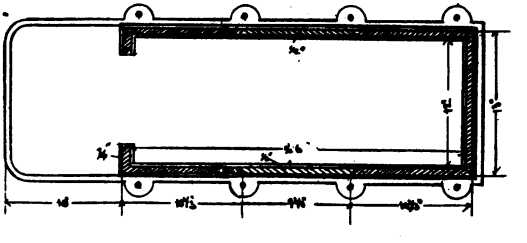
Length of Iron 2'7"
Width " " 1'7"
Height " 24"
Door " " 9"x14"
Height " Legs 8"
Thickness " Bottom Top ¼"
" " Side Plate ½"
" " Front Plate ¼



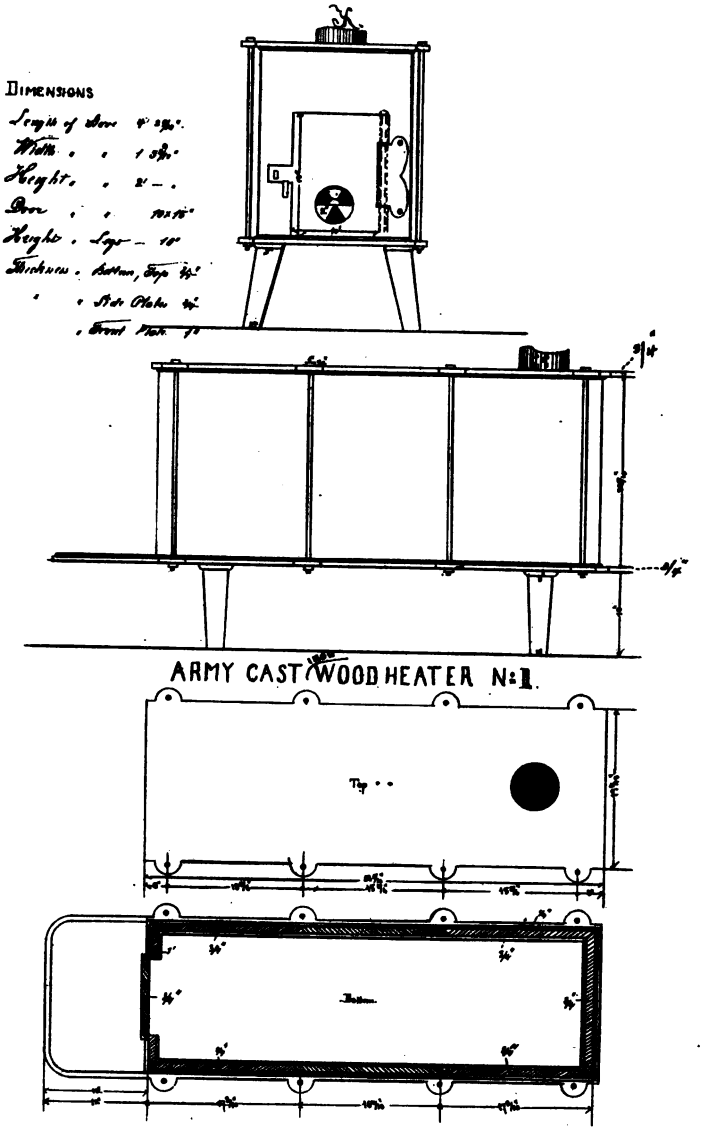




ARMY CAST IRON WOOD HEATER N: I



NOTE BY Q.M.G.O.— SIZE OF THE PIPE TO BE 6 INCH INSTEAD OF 5 INCH. RECOMMENDATION OF QUARTERMASTER GENERAL IN SUBMITTING REPORT TO THE SECRETARY OF WAR APPROVED BY LATTER

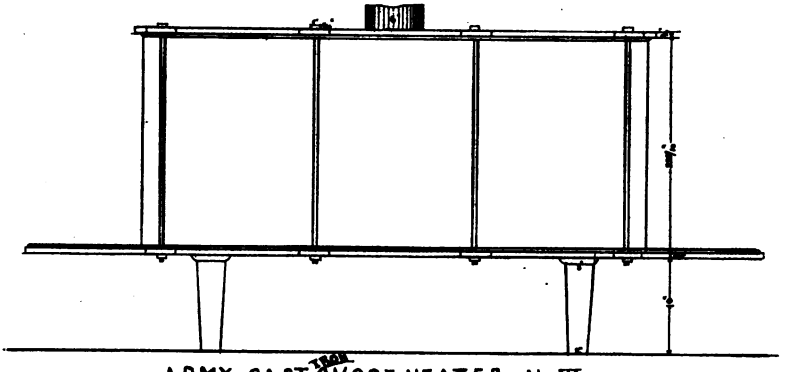


NOTE BY Q.M.G.O. - SIZE OF THE PIPE TO BE 7 INCH INSTEAD OF 6 INCH. RECOMMENDATION OF QUARTERMASTER GENERAL IN SUBMITTING REPORT TO THE SECRETARY OF WAR, APPROVED BY LATTER.

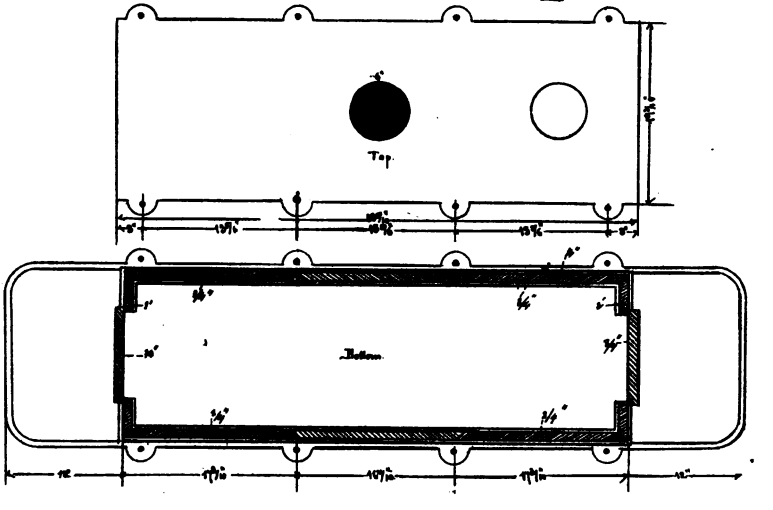
5.

DIMENSIONS

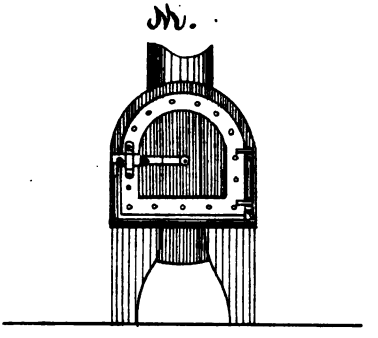
Length of Base 6' 3⅞"
Width " " 1' 3⅞"
Height " 2' —"
Door " " 10" 15"
Height of Legs 10"
Thickness of Bottom, Legs ¼"
" " Side Plates ⅜"
" " Front Plate ½"



ARMY CAST IRON WOOD HEATER N: III



NOTE BY Q.M.G.O.. SIZE OF THE PIPE TO BE 8 INCH INSTEAD OF 6 INCH. RECOMMENDATION OF QUARTERMASTER GENERAL IN SUBMITTING REPORT TO THE SECRETARY OF WAR, APPROVED BY LATTER.



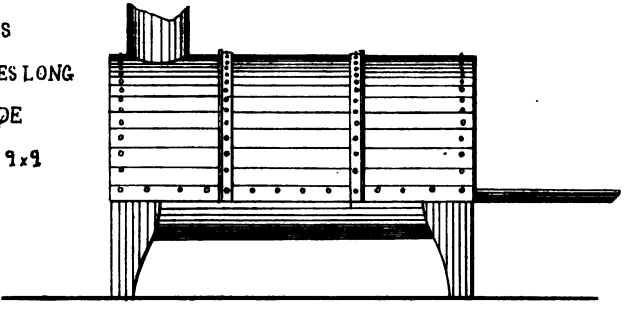
FRONT ELEVATION

DIMENSIONS

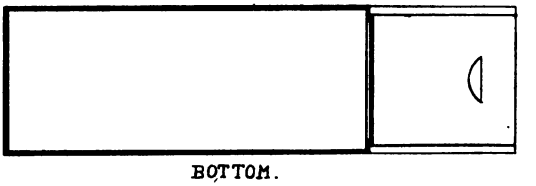
2 FEET 6 INCHES LONG

12 INCHES WIDE

SIZE OF DOOR 9 x 9



ARMY WROUGHT IRON WOOD HEATER N&III



BOTTOM.

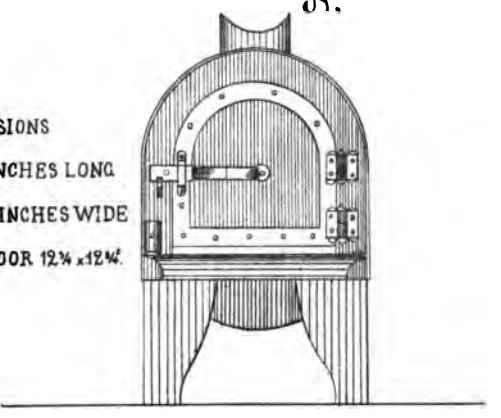
№.

DIMENSIONS

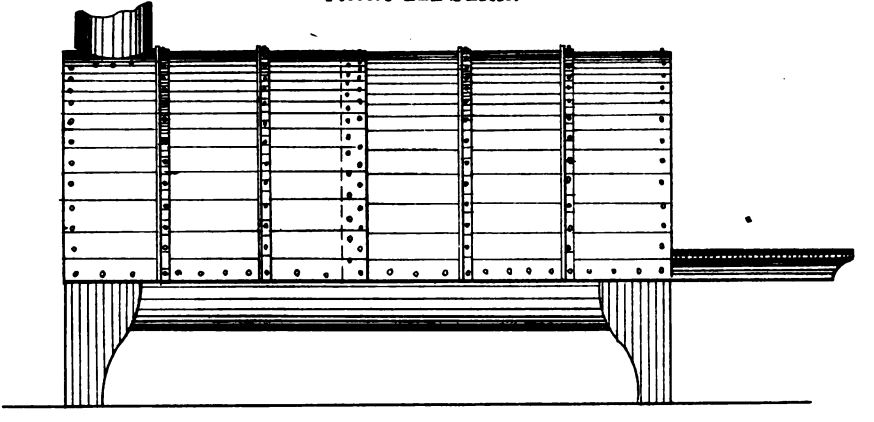
4 FEET. 2 INCHES LONG.

1 FOOT 6¾ INCHES WIDE

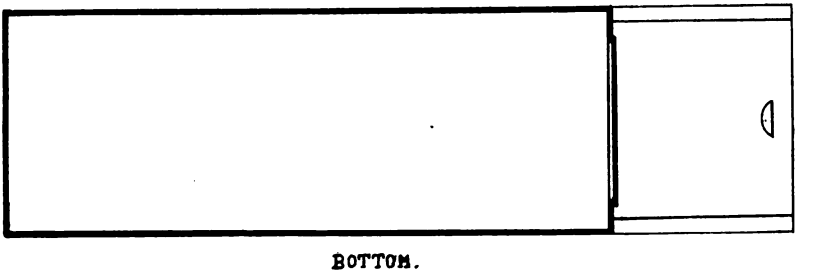
SIZE OF DOOR 12¾ x 12¾.



FRONT ELEVATION.

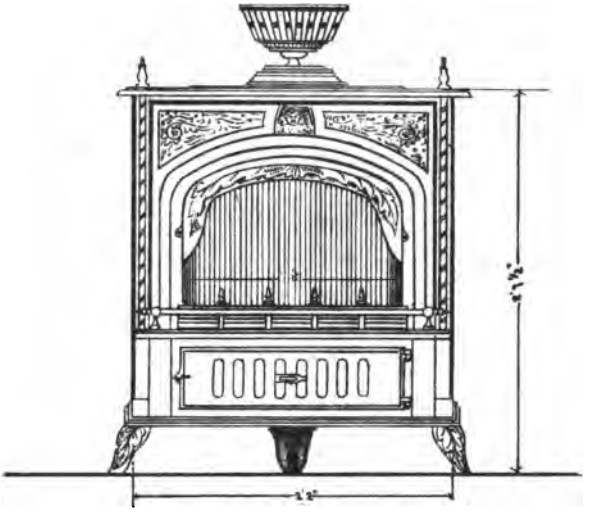


ARMY WROUGHT IRON WOOD HEATER. № V.

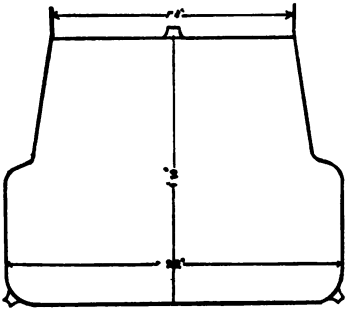


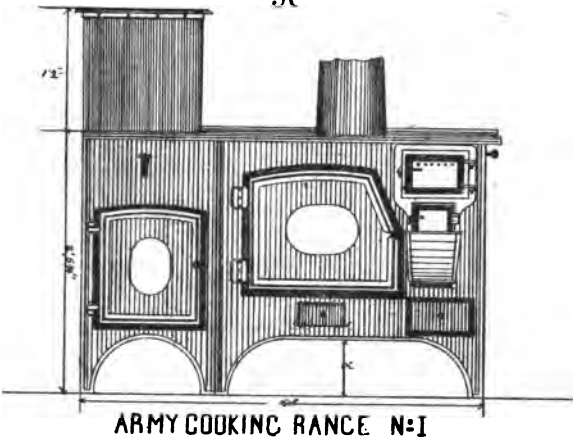
BOTTOM.

Q.

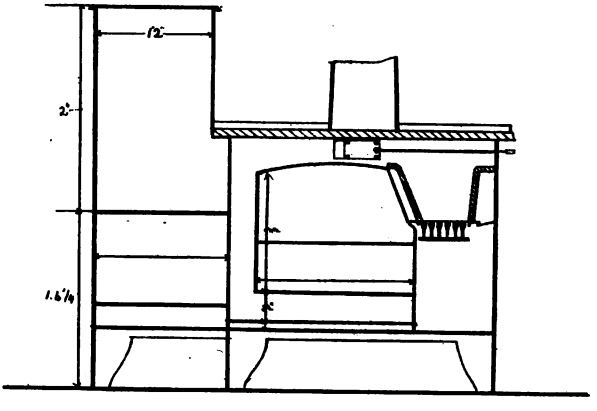


ARMY PARLOR HEATER.

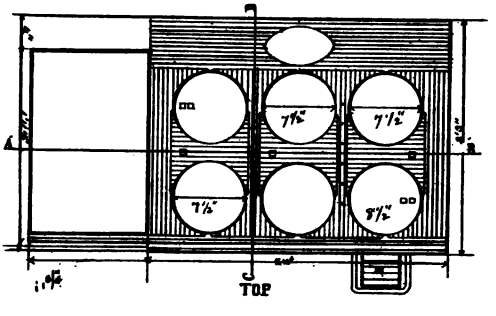




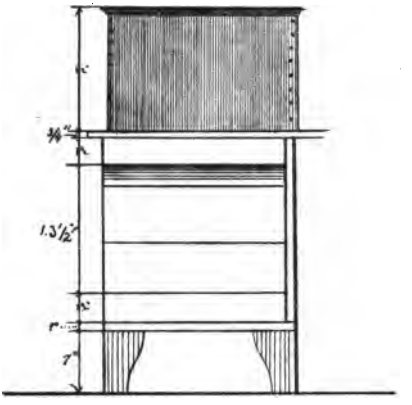
ARMY COOKING RANGE N:I



SECTION A.B.

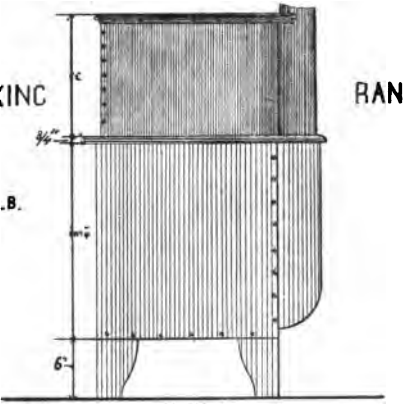


SECTION. C.D.

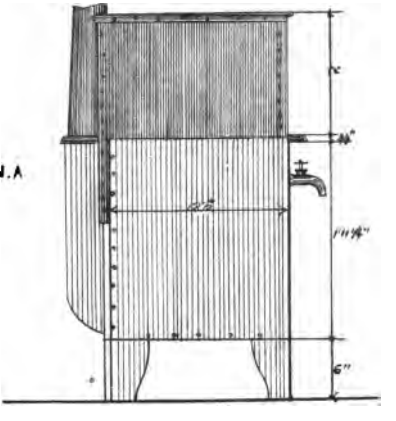


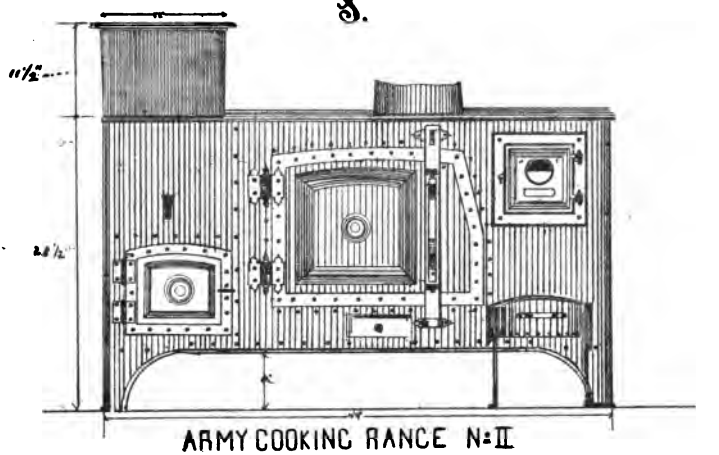
ARMY COOKING RANGE. No I

END ELEVATION. B.

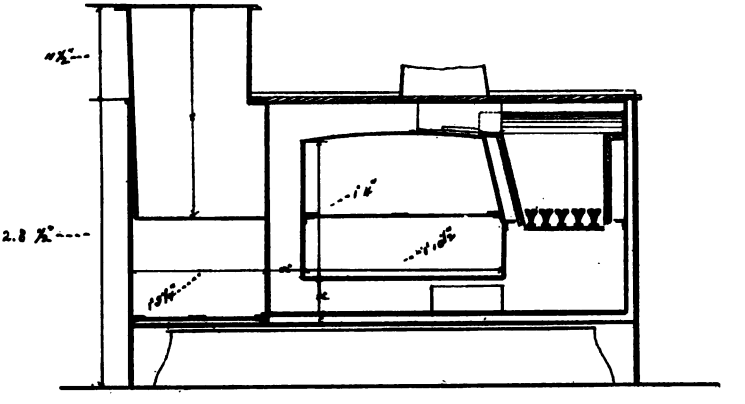


END ELEVATION. A

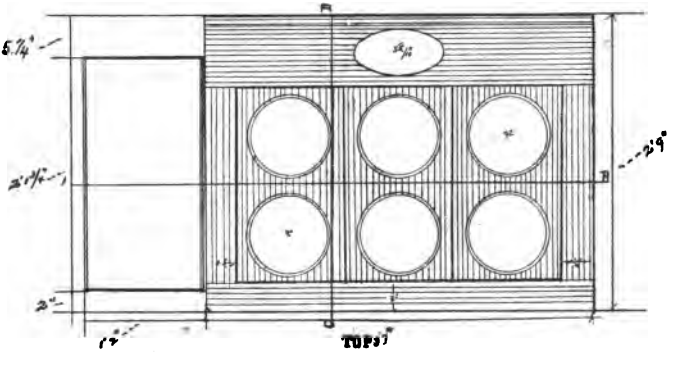




ARMY COOKING RANGE N:II

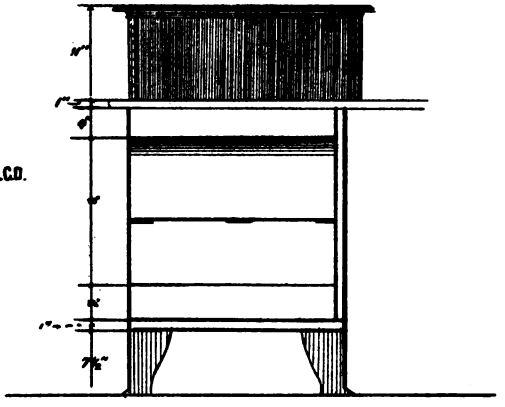


SECTION AB



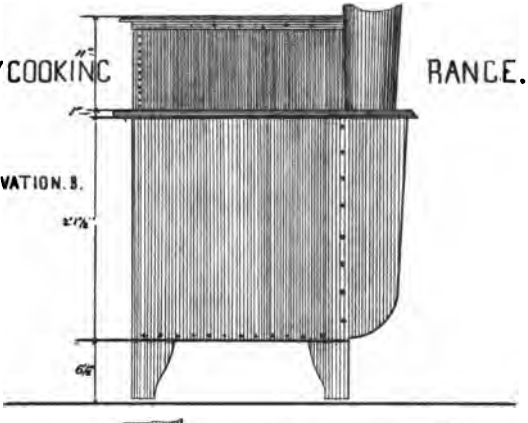
TOP

SECTION.C.D.

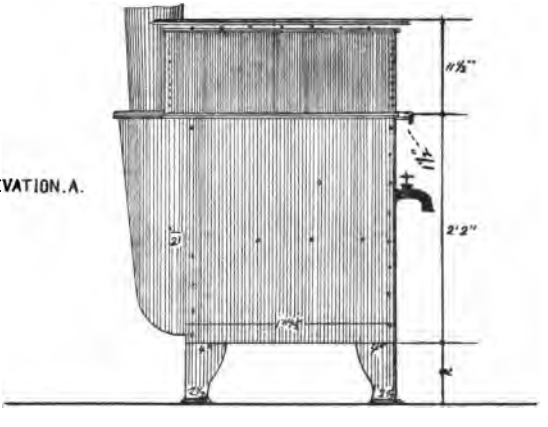


ARMY COOKING RANGE. N°II

END ELEVATION. B.



END ELEVATION. A.



SUPPLY-TABLE of allowances of Stoves, recommended by the Board of Officers appointed per Special Orders No. 68, War Department, A. G. O., April 17, 1875, (where quarters are not provided with open grates, or fire-places, or these are insufficient in very severe climates.)

	FOR QUARTERS.		FOR OFFICE.
	Heating-stoves.	Cooking-stoves or ranges.	Heating stoves.
The General. (Allowed by law for quarters and fuel $300 per month.)			
The Lieutenant General or major general	5	1	
A brigadier general or colonel	4	1	
A lieutenant colonel or major	3	1	
A captain or chaplain	2	1	
A lieutenant	1	1	
The General commanding the Army	------	------	3
The commanding officer of a geographical division or department	------	------	2
An assistant or deputy quartermaster general; an assistant commissary general of subsistence; an assistant surgeon general; the assistant judge advocate general; the assistant and deputy paymaster general; and the chief quartermaster, and chief commissary of subsistence at the headquarters of a geographical division or department	------	------	2
The commanding officer of a regiment or post, a paymaster, quartermaster, assistant quartermaster, commissary of subsistence, military storekeeper, and medical storekeeper, each	------	------	1
An assistant adjutant general; an inspector general, or an assistant inspector general; an engineer officer,* an ordnance officer,* a judge advocate, a medical purveyor, and the senior medical officer when stationed on duty at any place not in the field*	------	------	1
* Except at Military Academy.			
An acting assistant quartermaster, an acting assistant commissary of subsistence, a regimental or post adjutant, when approved by the quartermaster general, each	------	------	1
A wagon or forage master, sergeant-major, ordnance sergeant, saddler sergeant, quartermaster sergeant, commissary sergeant, hospital steward, regimental veterinary surgeon, chief trumpeter, and principal musician, each	1		
Superintendent national cemetery	1		
For a company: 2 large stoves in dormitory, 1 large stove in each the mess-room and day-room, 1 small stove for each of the two rooms for non-commissioned officers, and 1 small stove for the library, and 1 cooking-stove or range sufficient to cook its food	7	1	
Each necessary fire for the sick in hospital, each dispensary and hospital mess-room, to be regulated by the commanding officer and surgeon, not exceeding	1		
Each hospital kitchen	------	1	
For each guard-house, fire to be regulated by the commanding officer, not exceeding	1		
Each necessary fire for military courts or boards, not exceeding	1		
For chapel, reading or school-room, upon requisition approved by the commanding officer	1		
Storehouse of a commissary, quartermaster, and medical purveyor, when necessary, not exceeding	1		
A regimental or post mess	------	1	
For each authorized room as quarters for civilian employés	1		
For each six civilian employés to whom fuel is allowed	1		
For mess of civilian employés	------	1	
For telegraph office	1		
For each blacksmith, carpenter, and saddler shop	1		

[NOTE BY THE QUARTERMASTER GENERAL'S OFFICE.—The necessary heating-stoves for the additional office rooms authorized by General Orders No. 90, War Department, A. G. O., Nov. 1, 1875, will be allowed, not exceeding one heating-stove for each room.]

[Order appointing the Board.]

SPECIAL ORDERS
No. 68.

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
Washington, April 17, 1875.

EXTRACT.

* * * * *

2. A Board of Officers, to consist of—

Colonel J. C. Davis, 23d Infantry,
Lieutenant Colonel C. Grover, 3d Cavalry,
Lieutenant Colonel R. I. Dodge, 23d Infantry,
Lieutenant Colonel A. J. Perry, Deputy Quartermaster General,
Captain C. H. Hoyt, Assistant Quartermaster,

is appointed, to meet at Omaha, Nebraska, on the 15th day of May, 1875, or as soon thereafter as practicable, to draw up and submit, for the consideration of the Secretary of War, specifications for cooking and heating stoves and ranges for Army use, and to prepare a supply-table, giving the number to be supplied for use of officers and men in public quarters and barracks.

The Board will make their report to the Quartermaster General, who will lay before the Board such information as he may have on the subject.

The junior member of the Board will act as recorder.

* * * * *

BY ORDER OF THE SECRETARY OF WAR:

E. D. TOWNSEND,
Adjutant General.

OFFICIAL:

L. H. PELOUZE,
Assistant Adjutant General.

[Orders detailing certain officers as members of the Board in place of others thereby relieved.]

SPECIAL ORDERS
No. 80.

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
Washington, May 3, 1875.

EXTRACT.

* * * * *

4. Captain James H. Lord, Assistant Quartermaster, is detailed as a member of the Board to draw up and submit specifications for cooking and heating stoves and ranges for Army use, &c., appointed by Special Orders

No. 68, April 17, 1875, from this office, to meet at Omaha, Nebraska, on the 15th instant, *vice* Captain C. H. Hoyt, Assistant Quartermaster, hereby relieved.

BY ORDER OF THE SECRETARY OF WAR:

E. D. TOWNSEND,
Adjutant General.

OFFICIAL:

L. H. PELOUZE,
Assistant Adjutant General.

SPECIAL ORDERS
No. 99.

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
Washington, May 25, 1875.

EXTRACT.

* * * * *

6. Major J. S. Brisbin, 2d Cavalry, is detailed as a member of the Board of Officers to draw up and submit specifications for cooking and heating stoves and ranges for Army use, &c., appointed by Special Orders No. 68, April 17, 1875, from this office, *vice* Lieutenant Colonel R. I. Dodge, 23d Infantry, hereby relieved.

* * * * *

BY ORDER OF THE SECRETARY OF WAR:

E. D. TOWNSEND,
Adjutant General.

OFFICIAL:

L. H. PELOUZE,
Assistant Adjutant General.

SPECIAL ORDERS,
No. 103.

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
Washington, May 28, 1875.

EXTRACT.

* * * * * * * *

7. Captain E. B. Atwood, Assistant Quartermaster, is detailed as a member of the Board of Officers to draw up and submit specifications for cooking and heating stoves and ranges for Army use, &c., appointed by Special Orders No. 68, April 17, 1875, from this office, *vice* Captain James H. Lord, Assistant Quartermaster, hereby relieved.

* * * * * * * *

BY ORDER OF THE SECRETARY OF WAR:

E. D. TOWNSEND,
Adjutant General.

OFFICIAL:

L. H. PELOUZE,
Assistant Adjutant General.

"D."

WAR DEPARTMENT,
ADJUTANT GENERAL'S OFFICE,
Washington, D. C., May 6, 1875.

Col. J. C. DAVIS,
President of Board on Stoves and Ranges for Army use, Omaha, Nebr.

COLONEL: Referring to paragraph 2, General Orders No. 68, War Department, Adjutant General's Office, dated April 17, 1875, convening the Board above designated, I have the honor to furnish herewith a copy of the letter of this office of April 8th to the Honorable Secretary of War, asking for the appointment of the Board, showing the reasons and necessity therefor.

In order that the Board may be put in possession of full information of recent date, this office has prepared and published in the principal stove manufacturing centers of the country "a notice to stove dealers and manufacturers," inviting them to send to the Board, care of Chief Quartermaster, Omaha, Nebr., catalogues with price-lists of their stoves, both cast and wrought iron, suitable for the purposes stated in the advertisement, a copy of which is inclosed.

From an examination of the data that will thus be furnished, and from the experience and observation of the officers constituting the Board, it is believed that the Board will be enabled to draw up general specifications for style of stoves for heating and cooking, well adapted to Army use, without adopting or prescribing the stoves of any particular manufacturer, but leaving manufacture open to competition.

As the requisitions for stoves are believed in many cases to be greatly in excess of actual proper requirements and the annual expenditures therefor are also largely increasing, it is important that the number of stoves, both heating and cooking, to be supplied to officers of the different grades, and to troops in public quarters and barracks, should be established.

It is the opinion of the Quartermaster General that the maximum allowance of stoves to be purchased by the Quartermaster's Department should not exceed, for officers occupying public quarters, built or owned by the United States, a greater number, including heating and cooking, than their allowance of rooms requires, say for a lieutenant 2, for a captain 3, as the limit, and not these if the rooms have open fire-places, except in very severe climates; for a company of troops, a cooking-stove sufficient to cook its food, 2 large stoves in the dormitory, one large stove in each the mess-room and day-room, and one small stove for each of the two rooms for non-commissioned officers, and one small stove for the library, when there are no open fires, or they are insufficient in very severe climates.

These suggestions of the Quartermaster General as to the maximum allowance of the number of stoves for a company of troops are based on the arrangement and general plans of drawings of military buildings recommended to the Secretary of War by the Board on Revision of the Army Regulations, published September 14, 1872, (copy herewith.) As, however, most of the barracks at present occupied by troops are not built in accordance with the drawings referred to, an absolute fixed allowance of stoves, based on those plans of barracks, would not be always applicable. The general condition of the barracks occupied by the troops, the manner in which they are constructed, their location as to latitude, &c., and other matters, are questions that will suggest themselves to the Board in their deliberations.

It is believed that much loss is sustained by the Department on account of breakage of the cast-iron stoves by handling in transportation or otherwise, and in many instances the breakage, though slight, cannot be easily repaired or the broken part replaced, and the stove becomes unserviceable.

In view of this, it is thought probable that it may be found more economical to supply posts with wrought-iron stoves for use of *troops*, than with cast-iron stoves. Mr. John Van, of Cincinnati, the most extensive manufacturer of wrought-iron stoves known to this office, and perhaps others, will no doubt respond to the advertisement above referred to; from catalogues and price-lists all necessary information on the subject of wrought-iron stoves will probably be obtained by the Board. It is, however, remarked that the prices of Mr. Van's wrought-iron stoves seem very high compared with those of cast-iron stoves, especially as to cooking-stoves for officers. A catalogue and price-list of his wrought-iron stoves was sent to Chief Quartermaster Department of the Platte, April 5, 1875.

It is believed that it would be advantageous, and less expensive to the Department, if it could procure the stoves needed for Army use by contract, after advertisement, as in the case of other Army supplies. The patterns in common use are all registered at the Patent Office, which makes a difficulty in thus procuring stoves if any pattern of any one maker is adopted, and unless the patterns to be recommended by the Board are entirely new, it is not seen how that difficulty can be overcome. The question is, however, suggested for the consideration of the Board.

It is respectfully suggested that the Board embody in its report, if practicable, an opinion as to the length of time which the stoves recommended by it to be adopted should ordinarily last in Army use, and the maximum cost of every kind and size.

It should be borne in mind that the expense of providing the Army with stoves is very great, and that the appropriations made by Congress for its support are not as large as asked for, or as its wants and comforts in some particulars require. Therefore, while the stoves to be recom-

mended by the Board should be of size and character to answer requirements, they also should be of as plain and inexpensive construction and style as possible, having in view durability.

It is cheaper in the end to buy a stove which will wear five years, than to purchase three, four, or five stoves during the same period, where the first cost may be fifty per cent. cheaper; and yet to buy the stoves called for every year of the most durable kind, which is undoubtedly wrought-iron, may be too heavy a tax on the limited appropriation for the year.

The life of a cast-iron stove, with good usage in a family, is from 5 to 10 years; but, as before remarked, in the transportation of such stoves to distant posts they are often broken, or parts are broken or worn out while in use at the post, and there being no opportunity for a prompt replacement or repair of the broken parts, the stoves may be necessarily used as best they can be, though such use may, considering their condition, be really an abuse.

When stoves for officers are required at eastern posts, and others near markets, it is thought that the use of cast-iron stoves can perhaps advantageously be continued; but as the cost of transporting to distant posts is an important item, and is no more for a wrought-iron than for a cast-iron stove, it is considered more economical to buy and send to such posts wrought-iron stoves for use of both officers and men.

It is therefore suggested that the line dividing the supply of wrought and cast-iron stoves may be drawn as indicated, viz: to supply posts distant from the seats of manufacture and from the general depots with wrought-iron stoves, and the others with cast-iron, for officers at least.

The large number of catalogues and printed lists of stoves received here in response to advertisement of this office of 20th September, 1872, have been shipped by express to Lieutenant Colonel Alex. J. Perry, Chief Quartermaster Department of the Platte, for the information of the Board.

The following-named papers on the subject of stoves for Army use are inclosed herewith for the information of the Board:

Letter dated January 26, 1857, by Quartermaster General to Honorable Secretary of War, recommending that appropriations for stoves for quarters for officers and soldiers be asked for, stating number to be allowed to officers and troops.

Letter by Quartermaster General, August 8, 1874, to Honorable Secretary of War, on subject of stoves for Army use, and for officers in *rented quarters.*

* * * * * * * *

I am, very respectfully, your obedient servant,

(Signed) M. C. MEIGS,

Quartermaster General,

Bvt. Maj. Gen'l, U. S. A.

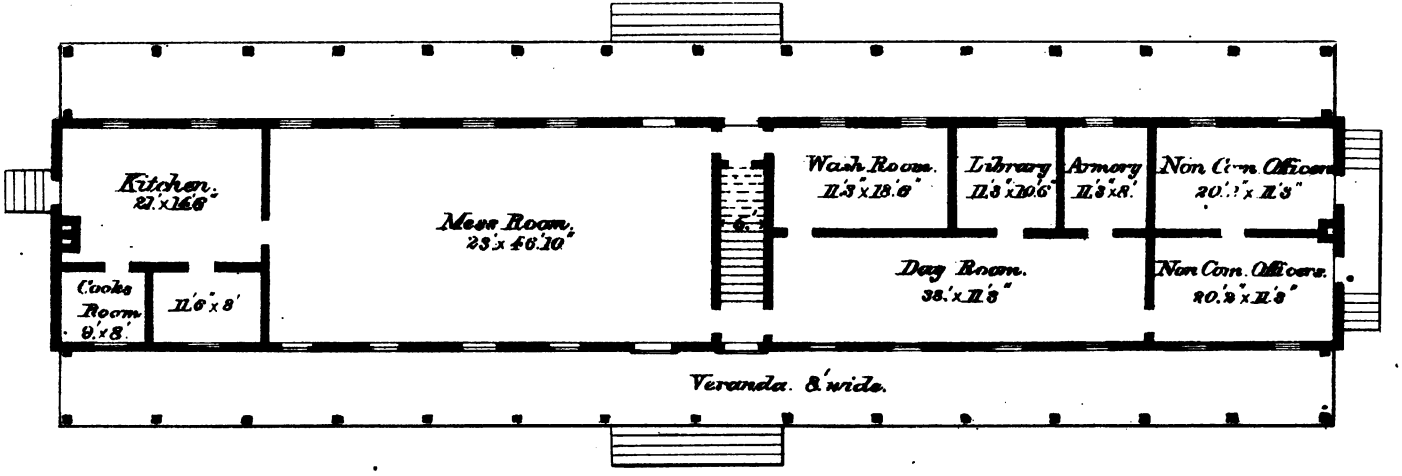
WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., September 14, 1872.

The accompanying drawings of military buildings were recommended to the Secretary of War by the Board on Revision of the Army Regulations.

M. C. MEIGS,
Quartermaster General,
Bvt. Maj. Gen'l, U. S. A.

No. 1.

COMPANY QUARTERS.

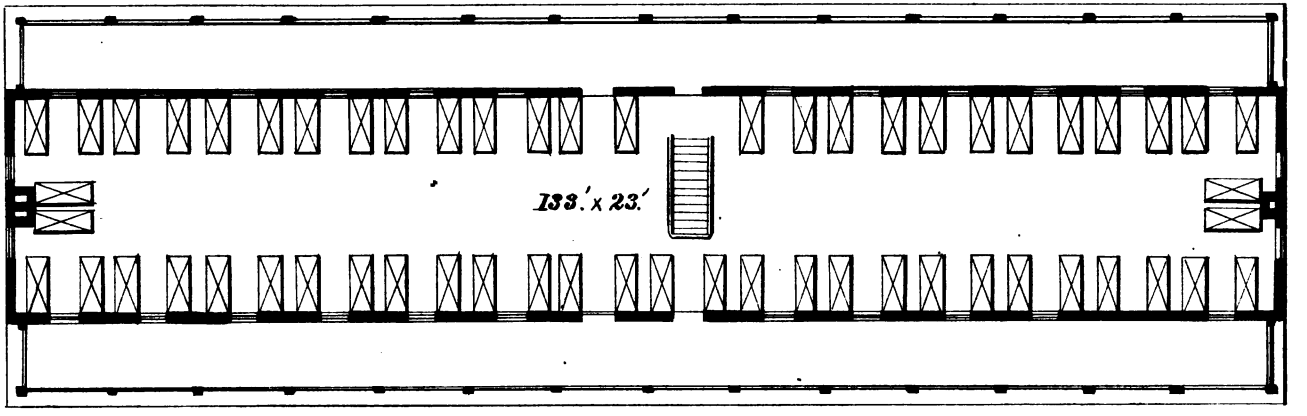


Plan of 1st Story.

Scale 20 feet to inch.

Nº2.

COMPANY QUARTERS.

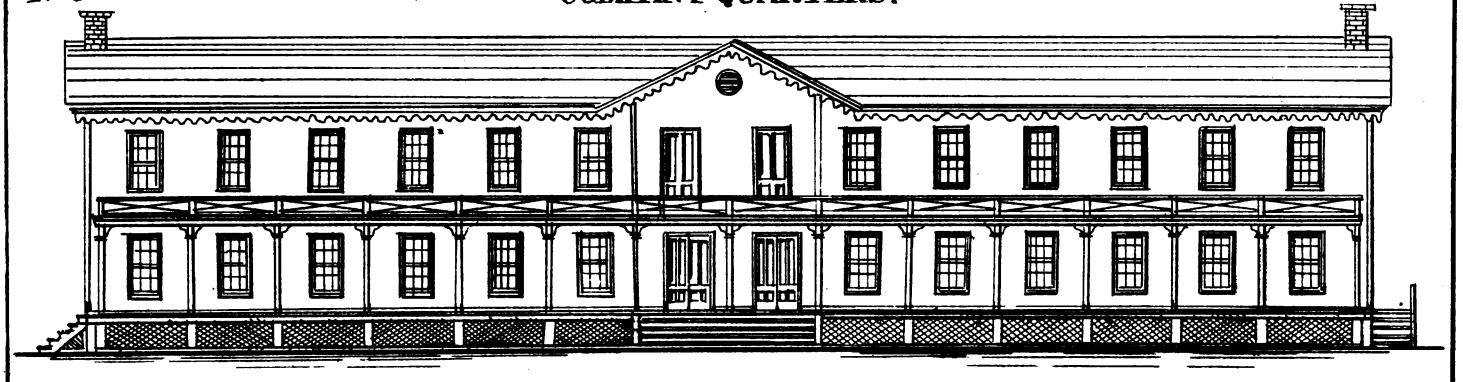


Plan of 2d Story.

Scale. 20 feet to 1inch.

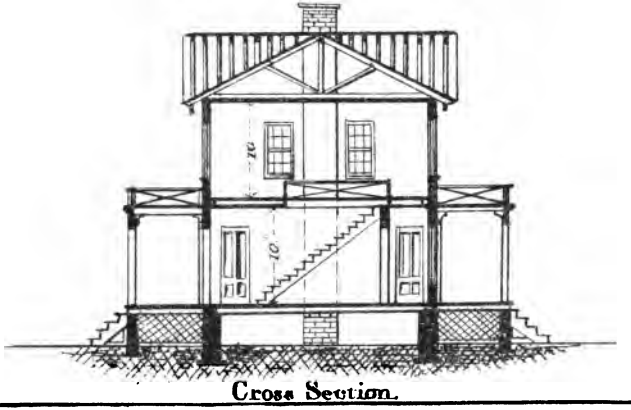
No3.

COMPANY QUARTERS.

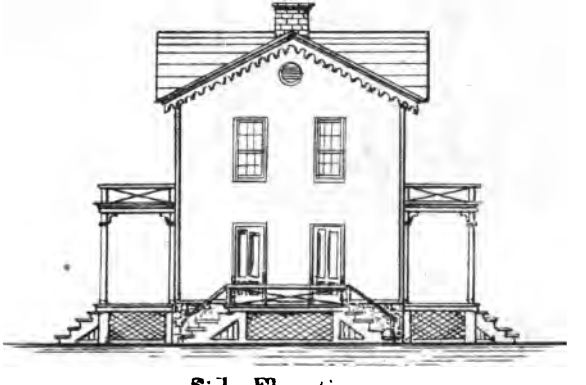


Front Elevation.

Scale. 20 feet to Inch.



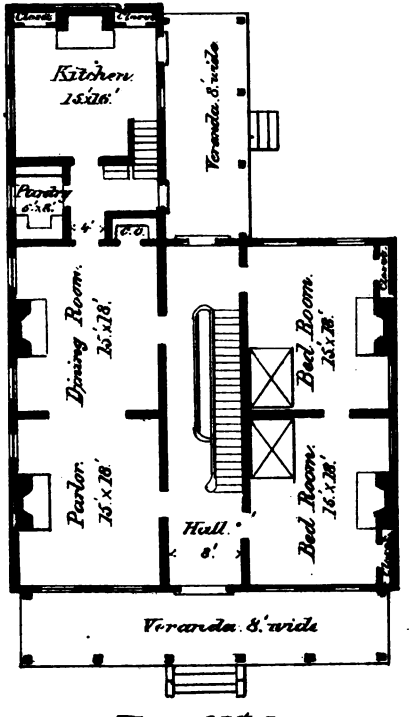
Cross Section.



Side Elevation.

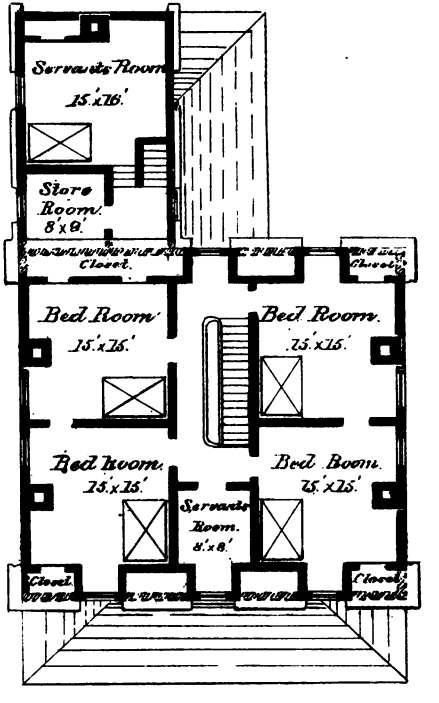
No 4.

COMMANDING OFFICER'S QRS.



Plan of 1st Story.

Front Elevation.

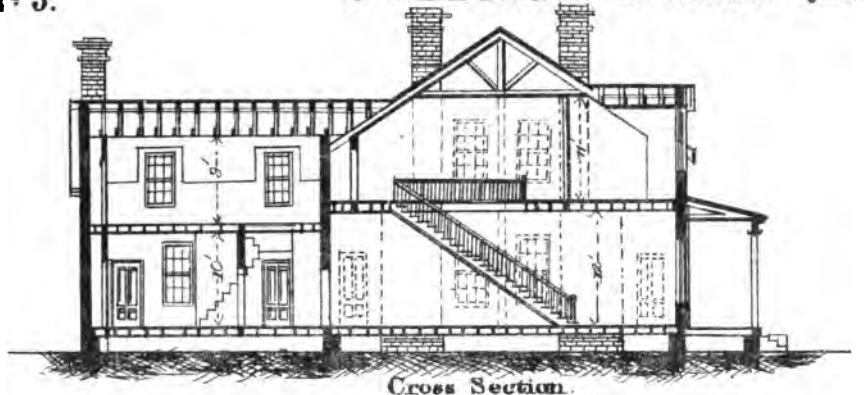


Plan of 2d or Attic Story.

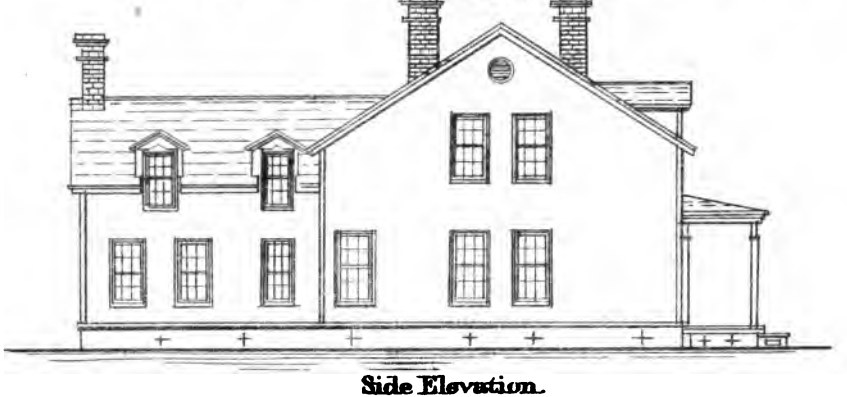
Scale. 20 feet to inch.

No 5.

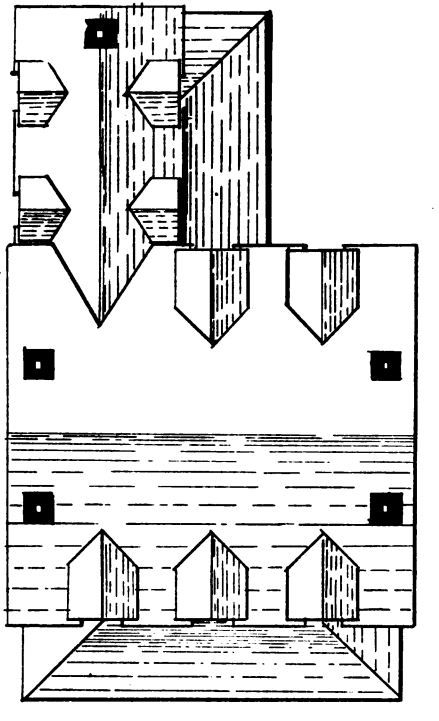
COMMANDING OFFICERS QUARTERS.



Cross Section.



Side Elevation.

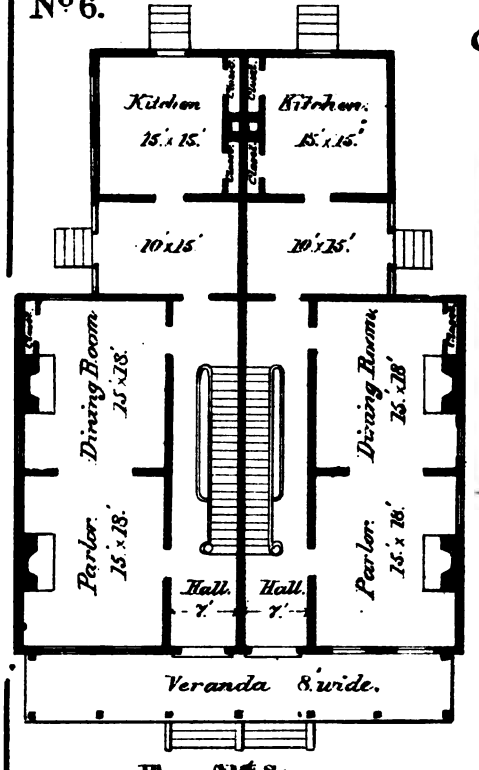


Plan of Roof.

Scale. 20 feet to Inch.

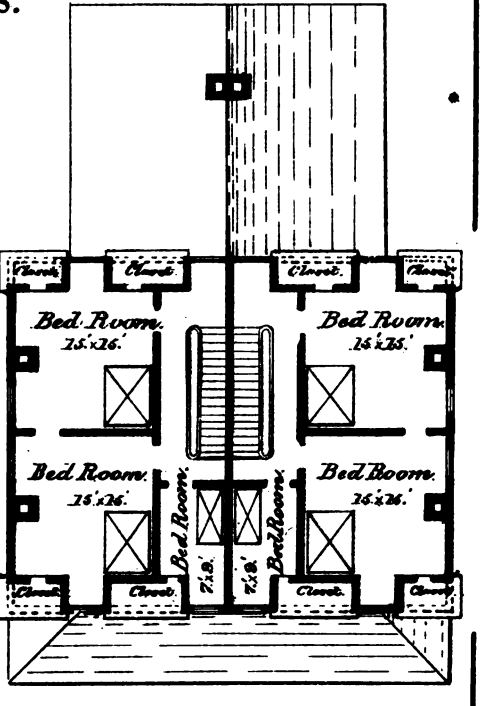
No 6.

COMPANY OFFICER'S QUARTERS.



Plan of 1st Story.

Front Elevation.

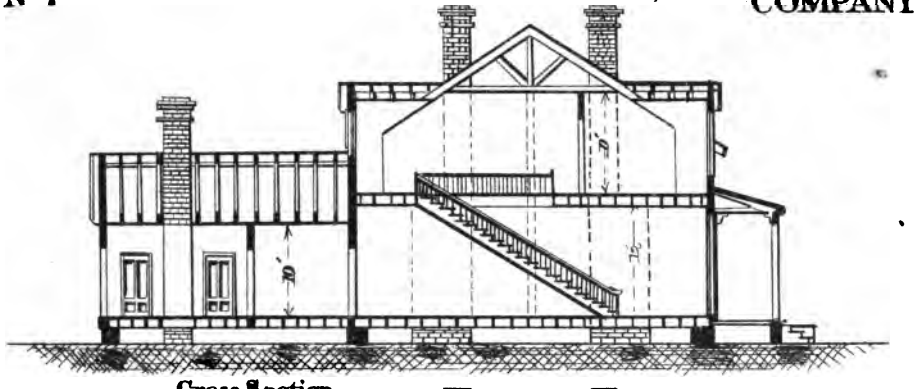


Plan of 2d Story or Attic.

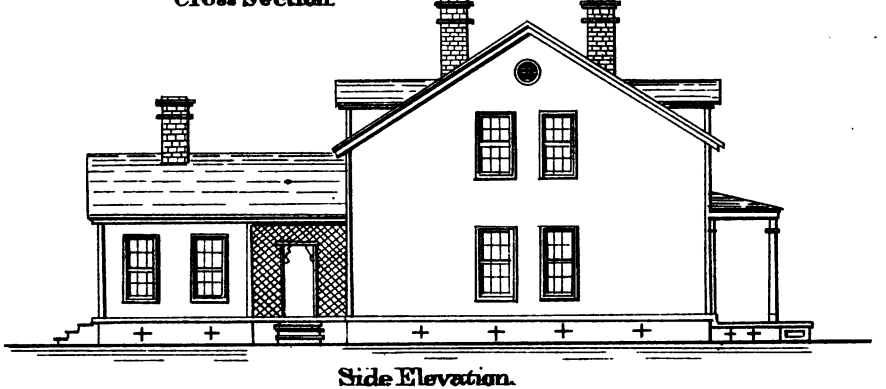
Scale. 20 feet to inch.

N°7

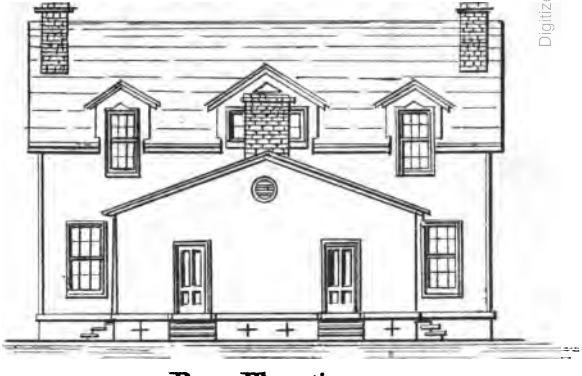
COMPANY OFFICER'S QUARTERS.



Cross Section.



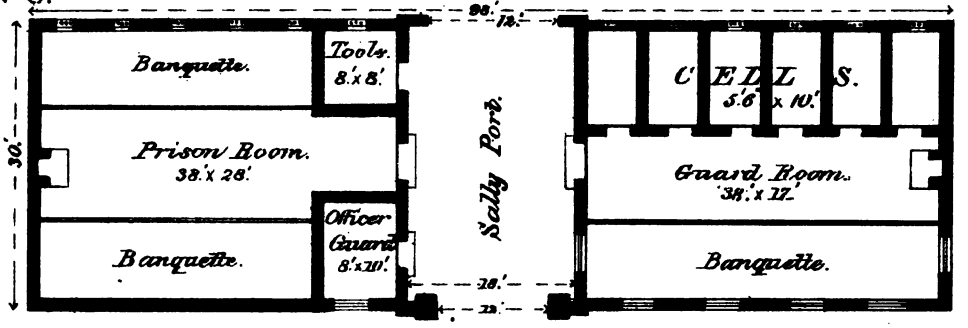
Side Elevation.



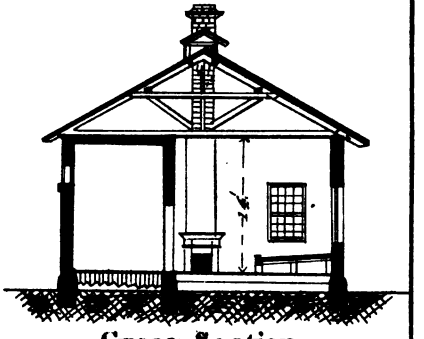
Rear Elevation.

Scale. 20 feet to inch.

No 8.



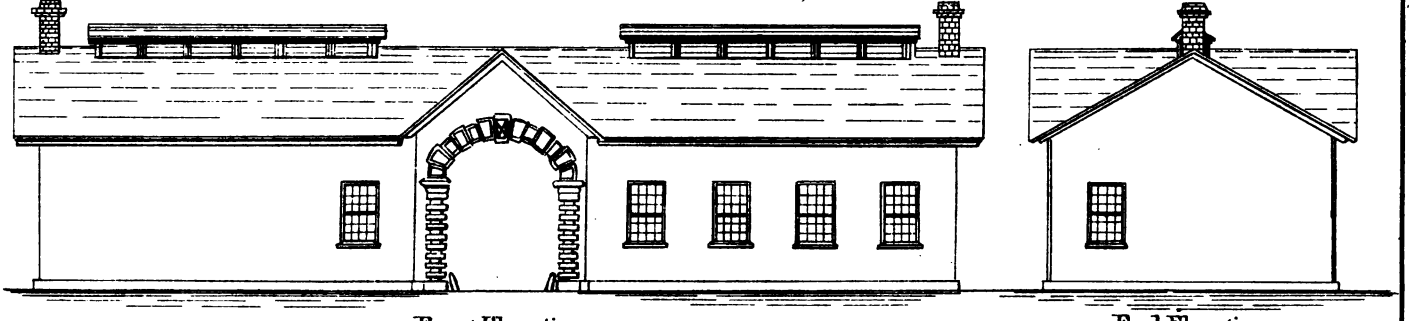
Plan of 1st Story.



Cross Section.

GUARD HOUSE.

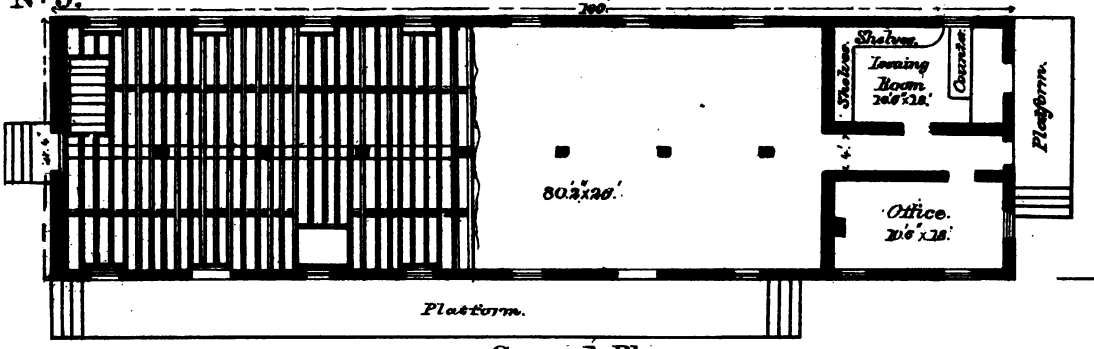
Scale. 20 feet to 1 inch.



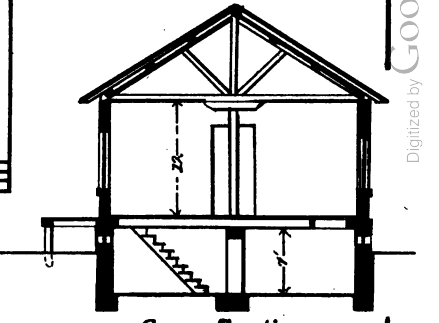
Front Elevation.

End Elevation.

No 9.



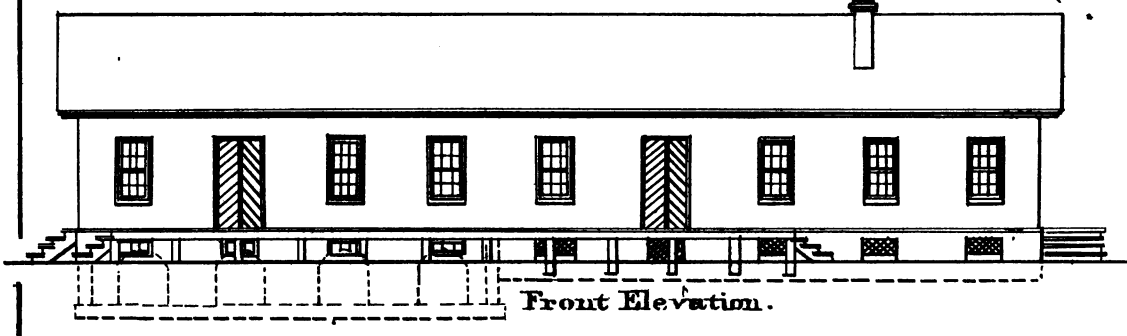
Ground Plan.



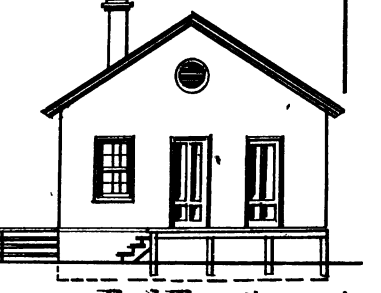
Cross Section.

COMMISSARY STORE HOUSE.

Scale. 20 feet to inch.



Front Elevation.

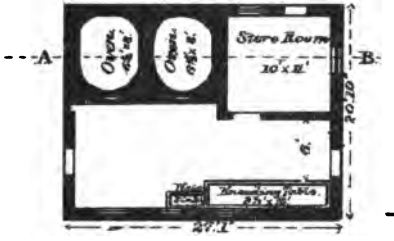


End Elevation.

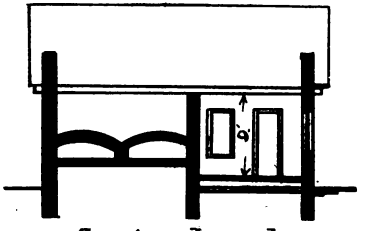
Nº10.

BAKE HOUSE.

Scale. 20 feet to 1 inch.

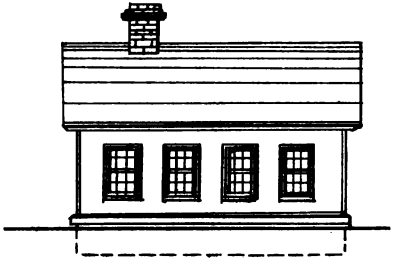


Ground Plan.

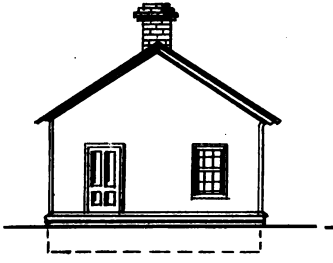


Section through. A.B.

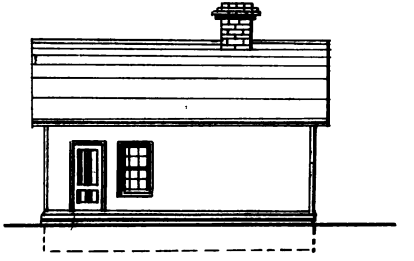
Front of Oven.



Front Elevation.



End Elevation.



Rear Elevation.

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., April 8, 1875.

To the Honorable the SECRETARY OF WAR:

SIR: The cost of providing stoves for the Army is now large, and seems to be increasing from year to year.

There is no uniformity in their size or pattern, and no regulation as to the number to be supplied, and consequently officers often ask for numbers greatly in excess of actual proper requirements, and ask various patterns, conforming to their respective fancies.

For the reasons stated, it is deemed advisable that some general patterns of cooking and heating-stoves and ranges should be adopted, and that regulations should prescribe the number to be supplied to officers and troops. It would not be well to adopt the stoves of any particular manufacturer to the exclusion of others, for this would be to prevent competition and to give just reason for complaint, but general specifications of size and construction of plain, substantial, and convenient heating and cooking stoves, adapted to bituminous and anthracite coal and wood, should be drawn up and published. Under these all who desire may compete for the supply by whatever name the stove offered may be distinguished.

To carry these suggestions into effect, I recommend that a Board of Officers, to consist of two officers of the Quartermaster's Department and three officers of the line who have had experience in command of posts and of companies in the West, be appointed, to meet at Omaha, Nebraska, on the 15th of May next, or as soon thereafter as practicable, to draw up and submit, for consideration of the Secretary of War, specifications for cooking and heating-stoves and ranges for Army use; and to prepare a supply-table, giving the number to be supplied for use of officers and of men in public quarters and barracks. The report of the Board to be made to the Quartermaster General, who will lay before the Board such information as he may have on the subject.

* * * * *

Very respectfully, your obedient servant,

(Signed) M. C. MEIGS,
Quartermaster General, U. S. A.

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., January 26, 1857.

Hon. JEFF'N DAVIS,
Secretary of War.

SIR: The officers' quarters at the post near Carlisle were consumed by fire on the 22d inst. An appropriation will be necessary to rebuild them. I respectfully request that application be made to Congress to include an item of twenty-five thousand dollars for that object, either in the deficiency bill or in the military appropriation bill for the next fiscal year. Also, an item of twenty thousand dollars to provide stoves for the quarters of officers and soldiers, not exceeding two to each officer above the rank of captain, and one to each captain and subaltern, and four to each company of soldiers above the 40° of north latitude, and two to each company below that latitude. * * * * *

There has never been an appropriation for either stoves or * * * , though the former are really necessary in the winter season in all the northern and northwestern portions of our country, and are often necessary in the western and southern portions of it. * * *

Very respectfully, your obedient servant,

(Signed) TH. S. JESUP,
Quartermaster General.

QUARTERMASTER GENERAL'S OFFICE,
August 7, 1874.

Mem. on stoves for officers.

The Quartermaster General has uniformly declined to approve requisitions for stoves for officers whose quarters are rented in cities. Supplying stoves was originally authorized on the ground that their use economized fuel, spared labor to the troops, who then cut and hauled their own fuel generally, and on the whole saved money to the United States.

The issue of cooking and heating-stoves to officers occupying quarters in military posts or garrisons has continued. Any fuel saved by their use remains the property of the United States and is available again. Officers serving with troops in these posts and garrisons have generally little more than the regulation allowance of rooms, and the supplying stoves is believed to be within the intent and scope of the appropriation.

Those who in cities, as San Francisco, New York, Washington, &c., occupy quarters rented for them by the Quartermaster's Department, do not generally live together in messes, occupying in fact only the regulation allowance of space, but they occupy separate houses, in each of which the quartermaster pays the rent of the number of rooms, the quantity of space allowed by regulations to each grade.

These rooms are generally rented in houses which contain much more than the regulation allowance, but in general the full amount of rent allowed, viz., $18, the cost per month per authorized room, is paid by the United States, and the officer himself pays any balance remaining necessary to secure him the use of a whole separate house.

The regulation allowance of fuel is issued in kind. This is based upon the quantity necessary in a medium climate to furnish an open fire-place in each room of the officer's allowance of quarters—1 cord of oak per month per room.

If stoves are furnished the quantity of fuel needed will be less. Stoves effect a great economy of fuel. But the saving in fuel will not go to the United States. It will generally be expended in heating for use of the family other rooms in addition to the allowances, and the United States will be at the expense of the whole of the fuel allowance and of the stoves in addition.

The issue of stoves, which include, as asked in this case, cooking-stoves with water-back, (and generally with furniture,) to officers occupying rented quarters in cities will very considerably increase the cost of the military service. They are expensive—officers object to receiving old stoves—officers are constantly changing, and the stoves once used will be condemned and sold at auction, to the manifest loss of the United States.

At the frontier posts and garrisons the circumstances are different. There the stoves or stove can be issued so long as they are really serviceable, and they are repaired from time to time by the quartermaster, new plates being supplied as needed to replace those burned out. These savings in fuel, as noted above, go to the United States, and the expense is on the whole presumably no greater, or even less, than would be incurred in burning the fuel without stoves.

The present appropriation for regular supplies was based upon the present practice, and if the issue of stoves, in the case presented * * * is allowed, there is reason to apprehend that the appropriation will prove insufficient.

The above history of the origin of the issue of stoves is sufficient to show the reasons for the present practice.

It would not be judicious to extend the issue as recommended by * *, and it might involve a deficiency, as it certainly would involve an increase of military expenses and appropriations.

The law of 1870 (Chap. 294, Sec. 24) provides, that the pay, then established, shall be in full of all commutation of quarters, fuel, and forage, &c.; and all allowances of every name and nature whatever—except fuel, quarters, and forage in kind—which may be furnished by the Quartermaster's Department, as then allowed by law and regulations.

It is at least doubtful whether, under this law, the issue of stoves to officers who are provided with quarters would be legal. It will be an-

swered by those who take the other view of right and expediency on the question that the stoves remain the property of the United States. This is practically correct while they are within the limits of military posts and under control of the post quartermasters, and the supply there is based upon their being fixtures—parts of the public quarters.

In renting quarters in cities detached, and necessarily less subject to supervision and control of the quartermaster, I am of opinion that it should be held that the rent includes the rent of rooms provided with means for warming them, suited to the climate. I do not think the United States is under obligation to furnish an officer with cooking utensils for his family; and I believe that in renting rooms the means of warming, either by fireplace or stoves, can generally be obtained with the allowance.

There may be exceptions, but it is impossible to make a separate regulation for every exceptional case, and every exceptional allowance becomes a precedent upon which is based a requisition in some other and dissimilar case.

I do not, therefore, recommend that the issue of stoves to officers, for whom quarters are rented, be allowed.

(Signed) M. C. MEIGS,
Quartermaster General,
Bvt. Maj. Gen'l, U. S. A.

[Indorsement on the foregoing letter.]

The views of the Quartermaster General are approved. In my judgment the issue would not only be inexpedient but illegal.

(Signed) WM. W. BELKNAP,
Secretary of War.

August 14, 1874.

[Copy of advertisement of Quartermaster General's Office inviting stove manufacturers and dealers to send to the board catalogues, price-lists, &c.]

NOTICE TO STOVE MANUFACTURERS AND DEALERS.

QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., April —, 1875.

A Board of Army Officers will convene at Omaha, Nebraska, on May 15th, proximo, and remain in session a reasonable length of time, to consider and recommend a general pattern of stoves for Army use, to include heating and cooking-stoves, to burn anthracite coal, bituminous coal, and wood, respectively.

Stove manufacturers and dealers are invited to send to the Board, care of Chief Quartermaster, Omaha, Nebraska, catalogues with price-lists of

their stoves, both cast and wrought, suitable for purposes stated, and also to communicate any suggestions they may have to offer for the construction of stoves adapted especially to meet the wants of the Army.

Rooms of officers' quarters to be heated are usually about 15 feet square. Cooking-stoves required for officer's use are such as a family needs.

Barracks for men contain rooms of different sizes, generally large, and require stoves of large size to heat them.

Cooking-stoves for companies or detachments should have capacity to cook for 80 men.

(Signed) M. C. MEIGS,
Quartermaster General,
Bvt. Maj. Gen'l, U. S. A.

INDORSEMENTS UPON REPORT OF THE BOARD, SHOWING ACTION THEREON.

[1st Indorsement.]

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, April 18, 1876.

Respectfully forwarded to the Adjutant General of the Army, recommending that the recommendations of the Board be approved, subject to modifications as to size of pipe for wood heaters Nos. 1, 2, and 3; the size of the pipe to be 6 inches, 7 inches, and 8 inches, respectively, for these stoves, instead of the sizes recommended for them by the Board. It is also recommended that the proceedings be printed for the use of officers, and that a supply of the stoves be procured for issue to the Army.

M. C. MEIGS,
Quartermaster General,
Bvt. Maj. Gen'l, U. S. A.

[2d Indorsement.]

ADJUTANT GENERAL'S OFFICE,
Washington, April 20, 1876.

Respectfully submitted to the Secretary of War.

E. D. TOWNSEND,
Adjutant General.

[3d Indorsement.]

Recommendations of the Quartermaster General and the Board are approved.

By order of the Secretary of War:

H. T. CROSBY,
Chief Clerk.

April 25, 1876.

[4th Indorsement.]

ADJUTANT GENERAL'S OFFICE,
Washington, April 28, 1876.

Respectfully returned to the Quartermaster General, inviting attention to the action of the Secretary of War indorsed hereon.

E. D. TOWNSEND,
Adjutant General.

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., October 13, 1881.

Under the authority of the Secretary of War, dated October 10, 1881, the drawing attached hereto is hereby substituted for the drawing "O," Army cast-iron coal heater No. 6, contained in the report of the Board of Officers on the subject of stoves and ranges for Army use, published by this office in pamphlet form May 25, 1876.

This change is made in order that the grate can be more readily shaken and cleaned.

S. B. HOLABIRD,
Acting Quartermaster General,
Bvt. Brig. Gen'l, U. S. A.

5003 Q. M. G. O., 1881.

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., March 1, 1881.

Under the authority of the Secretary of War, dated February 11, 1881, the specifications for Army cast-iron coal heater No. 7, embraced in the report of the Board of Officers on the subject of stoves and ranges for Army use, published by this office in pamphlet form May 25, 1876, is hereby amended by striking out the words, "The grate is in two parts, (halves,)" on page 7 of the pamphlet, and substituting therefor the words "The grate is in three pieces;" so that the sentence will read: "The grate is in three pieces, so that it can be readily removed; it rests on a $\frac{3}{4}$-inch ring or shoulder inside of the stove."

This change is made in order that the grate can be shaken and cleaned.

The drawing appended hereto is substituted for the drawing "P," Army cast-iron coal heater No. 7, contained in the pamphlet hereinbefore mentioned.

To shake the grate, insert a poker in hole "*h*" (see drawing) and move it up and down.

To clean the grate and remove clinker, tilt the revolving part of the grate into a vertical position.

The following are the weights of the Army cast-iron wood and coal heaters of regulation patterns, the weight of coal heater No. 7 being with the new grate:

Wood heaters	No. 1,	460 pounds.
	No. 2,	1080 pounds.
	No. 3,	1145 pounds.
Coal heaters	No. 6,	243 pounds.
	No. 7,	1002 pounds.

M. C. MEIGS,
Quartermaster General,
Bvt. Maj. Gen'l, U. S. A.

7690 Q. M. G. O., 1880.
Filed with 4734 Q. M. G. O., 1875.

MODIFICATION OF SPECIFICATIONS FOR WATER-TANKS OF ARMY COOKING-RANGES NOS. 1 AND 2.

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE,
Washington, D. C., September 3, 1879.

Under authority of the Secretary of War, the water-tanks of the Army cooking-ranges Nos. 1 and 2 will hereafter be made of 18-pound sheet-copper, heavily tinned inside, and black enameled outside to correspond with the ranges, instead of galvanized iron, and the specifications for these ranges, published by this office May 25, 1876, are hereby modified accordingly.

M. C. MEIGS,
Quartermaster General,
Bvt. Maj. Gen'l, U. S. A.

4822 Q. M. G. O., 1879.
Filed with 4734 Q. M. G. O., 1875.

SPECIFICATIONS OF FURNITURE

FOR THE

Nos. 1 and 2 Army Cooking-Ranges,

ADOPTED BY CIRCULAR FROM QUARTERMASTER GENERAL'S OFFICE, DATED MAY 25, 1876.

Range No. 1.

One wash-boiler.—The wash-boiler to be of 4 XXXX bright charcoal tin, with oval ends, and drop bottom ¾ inch deep, of 18-oz. copper; length 21¼ inches, width 10¼ inches out to out; extreme depth inclusive of drop bottom, 14 inches. Capacity 11 gallons.

Ears.—Ears of same material as boiler; to be 2⅛ inches wide, 1 inch long, riveted on and doubled to take handle.

Handles.—Handles of No. 5 iron wire, 4 inches long, 1¾ inch wide out to out. Top to be edged over No. 5 iron wire.

Cover.—Cover to be of 2 XX hundred plate bright charcoal tin with usual pitch.

Lifting-handle.—Lifting-handle, 1¼ inch wide, with creased edges, to form one-half of circle 3¾ inches diameter; to be soldered and riveted on.

Rim.—Rim of cover 1 inch deep.

One coffee-boiler.—The coffee-boiler to be of 3 XXX hundred plate bright charcoal tin, with drop bottom ¾ inch deep, of 18-oz. copper. Diameter at base 8⅞ inches, tapering to 5½ inches at top; extreme depth 9¼ inches, inclusive of drop bottom. Capacity 1½ gallon. Top to be edged over No. 9 iron wire.

Ears.—Boiler to have substantial ears 1⅜ inch long, 1¼ inch wide, finished, tapering to ¾ inch at top. Ears to be riveted on.

Bail.—Bail to be of No. 8 iron-wire.

Handle.—Handle to be 1¼ inch wide at top, tapering to ¾ inch at lower end, with 2½-inch arch; extreme length 5¼ inches. To be edged over No. 9 iron wire, soldered and riveted to boiler.

Lip.—Lip to project 1⅞ inch at top; width at boiler to be 2⅜ inches, tapering to 1 inch at point; to be edged and double-creased and applied to boiler with three rivets. To have not less than thirty perforations on inside, properly spaced.

Cover.—Cover to be of 2 XX hundred plate bright charcoal tin, with $\frac{3}{8}$-inch rim.

Ring.—Lifting-ring to be 1 inch diameter, $\frac{3}{4}$ inch wide, edged and creased; clinched through cover and soldered.

One steamer.—The steamer to be of 2 XX hundred plate bright charcoal tin, $10\frac{1}{4}$ inches diameter out to out, depth $4\frac{1}{2}$ inches. Top to be edged over No. 8 iron wire. Bottom to be without rim, pinned to body; to have three triangular rests arranged to fit pot, and to have not less than fifty-seven (57) perforations, each $\frac{3}{16}$ inch diameter, properly spaced.

Handles.—Handles to be $1\frac{5}{8}$ inch wide, $3\frac{1}{2}$ inches long, with $1\frac{1}{4}$-inch arch at bottom. To be edged and creased and soldered on.

Cover.—Cover to be of same material as steamer, with usual pitch, and $\frac{3}{4}$-inch rim.

Handle.—The lifting-handle to be $1\frac{1}{8}$ inch wide, and to form a half circle of $3\frac{1}{4}$ inches diameter; to be edged and creased, soldered and riveted on.

One tea-kettle.—The tea-kettle to be of best quality cast-iron, not less than $\frac{1}{16}$ inch thick; size, No. 8 of standard pattern, with sliding lid; capacity $1\frac{1}{2}$ gallon.

Bail.—Bail to be of $\frac{1}{2}$-inch half-oval iron.

Weight.—Weight to be not less than $8\frac{1}{4}$ pounds.

Three bake-pans.—The bake-pans to be of No. 22 smooth, cleaned, charcoal sheet-iron, without seams, and with substantial folds at corners, and of two sizes, as follows:

Size.—One (1) 15 x $16\frac{1}{2}$ inches, two (2) $7\frac{1}{2}$ x $15\frac{1}{4}$ inches, measurement on bottom outside; all to be $2\frac{1}{2}$ inches deep, with 1 inch flare on all sides. Large pan to be edged over No. 6, and small pans over No. 8 iron wire.

Ears.—Ears to be 2 inches long, $1\frac{1}{8}$ inch wide, doubled over handles, and applied with two rivets in each.

Handles.—Handles to be of No. 7 iron wire; length $3\frac{1}{4}$ inches, width $1\frac{1}{2}$ inch out to out.

One pot cover.—The pot cover to be of 2 XX hundred plate bright charcoal tin, $10\frac{1}{4}$ inches diameter, with not less than four corrugations on surface.

Ring.—Lifting-ring to be of No. 11 iron wire, clinched through and soldered.

Two pots.—The pots to be of best quality cast-iron, not less than $\frac{1}{16}$ inch thick, of standard pattern; diameter at top $10\frac{1}{2}$ inches out to out, depth at center $9\frac{1}{4}$ inches. Capacity $2\frac{1}{2}$ gallons each.

Bail.—Bail to be of No. 4 iron wire.

Weight.—Weight to be not less than $8\frac{1}{2}$ pounds.

Two skillets.—The skillets to be of best quality cast-iron, not less than $\frac{1}{16}$ inch thick; diameter, out to out at bottom, 9 inches; depth $1\frac{7}{8}$ inch; flare of sides $\frac{3}{4}$ inch.

Lip.—Lip, on left side from handle, of proper projection.

Handle.—Handle to be 5 inches long, curved; greatest width 1¼ inch.

Weight.—Skillets to weigh not less than 3¾ pounds each.

Two griddles.—The griddles to be of best quality cast-iron, not less than $\frac{1}{16}$ inch thick; diameter, out to out, 9¾ inches; depth to be ½ inch. To have rim formed in casting to fit 8-inch opening.

Handle.—Handle to correspond in size and pattern to those of skillets.

Weight.—Weight of griddles to be not less than 2¾ pounds each.

One iron-heater.—The iron-heater to be of best quality cast-iron, not less than $\frac{1}{16}$ inch thick, with oval ends; length, out to out exclusive of handle, 19¼ inches; width, out to out, 9½ inches inclusive of flange; depth 1½ inch, with slight flare of sides.

Flange.—Flange 1 inch wide, with $\frac{3}{16}$-inch molded edge.

Handles.—End handles to be formed in casting, not less than 2 x 1¼ inch, with openings 1 x ⅝ inch.

Weight.—Weight of heater to be not less than 5¼ pounds.

Three joints and one elbow stove-pipe.—The stove-pipe and elbow to be of best quality sheet-iron, No. 24, size 7-inch; pipe to be double-seamed, riveted at ends, beaded 1¾ inch from top. Elbow to be curved and formed of not more than five pieces, the pieces to be substantially riveted.

Range No. 2.

One wash-boiler.—The wash-boiler to be identical in material, style, and finish with that for No. 1 range; length 23¼ inches, width 11¾ inches out to out, extreme depth 14 inches, inclusive of drop in bottom. Capacity 14 gallons.

One coffee-boiler.—The coffee-boiler to be identical in material, style, and finish with that for No. 1 range; diameter at base 11⅛ inches, tapering to 7 inches diameter at top; extreme depth 11⅜ inches, inclusive of drop in bottom. Capacity 3 gallons.

Ears.—Ears to be 1½ inch long, 1½ inch wide, tapering to 1 inch at top.

Bail.—Bail to be of No. 7 wire.

Handle.—Handle to be 1½ inch wide at top, tapering to ¾ inch, with 3-inch arch.

Lip.—Lip to project 2¼ inches, width at top 2½ inches, tapering to 1¼ inch at point. To have not less than forty-two perforations on inside, properly spaced.

One steamer.—The steamer to be identical in material, style, and finish with that for No. 1 range; diameter at top 11¼ inches out to out; depth 4½ inches; bottom to have not less than fifty-nine perforations, each $\frac{3}{16}$ inch diameter, properly spaced.

One tea-kettle.—The tea-kettle to be identical in material and style with that for No. 1. Size to be No. 9. Capacity 2 gallons.

Weight.—Weight of kettle to be not less than 9¾ pounds.

Three bake-pans.—The bake-pans to be identical in material and finish with those for No. 1 range. Sizes as follows:

Size.—One (1) 18¾ x 19¾ inches; two (2) 7¾ x 19½ inches, measurement on bottom, outside. Large pan to be 3¼ inches deep; small pans 2½ inches deep, all 1-inch flare.

Reinforcing bands.—Large pan to have reinforcing bands ¾ x ⅛-inch wrought-iron on each side, well secured.

Ears.—Ears to be 2½ inches long, 1¼ inch wide.

Handles.—Handles of large pan to be of No. 4, of small pans of No. 5 iron wire, all 3¾ inches long, 1½ inch wide out to out.

One pot-cover.—The pot-cover to be identical in material and style with that for No. 1 range; diameter 11¼ inches.

Two pots.—The pots to be identical in material and style with those for No. 1 range; diameter at top 11¼ inches out to out; depth at center 10¼ inches. Capacity 3¼ gallons each.

Weight.—Weight to be not less than 10 pounds each.

Two skillets.—The skillets to be identical in material and style with those for No. 1 range; diameter, out to out at bottom, 10¼ inches; depth 2⅛ inches; flare of side ¾ inch.

Handle.—Handle to be 5½ inches long, curved; greatest width 1½ inch.

Weight.—Skillets to weigh not less than 5 pounds each.

Two griddles.—The griddles to be identical in material and style with those for No. 1 range; diameter 10¾ inches out to out; depth ½ inch; to have rim to fit 9-inch opening.

Weight.—Weight to be not less than 3½ pounds.

One iron-heater.—The iron-heater to be identical in material and style with that for No. 1 range; length out to out, exclusive of handle, 21¾ inches; width, out to out, 10⅜ inches, inclusive of flange; depth 1⅝ inch.

Weight.—Weight to be not less than 6½ pounds.

Three joints and one elbow stove-pipe.—The stove-pipe and elbow to be identical in material and workmanship with that for No. 1 range, except that elbow must be formed of not more than four pieces. Size 8 inches.

General Remarks.

All work to be done in the best workmanlike manner. All work on the tin furniture, unless otherwise specified, to be double seamed and soldered. All castings to be smooth. Tea-kettle and pots to be blacked on outside. Sizes of wire will be governed by the J. R. Brown & Sharpe American Standard Gauge.

SPECIFICATIONS

FOR

LAMPS FOR MILITARY POSTS.

The lamps shall be of two patterns—the Pendant two-burner and the single-burner bracket lamp, and are intended to burn the Army Standard Mineral Oil of flash point not less than 135° Fahrenheit.

Pendant two-burner Lamp.

Form and material.—To be of form and materials according to the standard sample.

Font-holder.—The font-holder (part No. 1) to be made of sheet brass No. 22, (American standard gauge), and to be put together with hard solder, *i. e.*, to be brazed and spun over to harden and stiffen the holder. Diameter at top, four and a half ($4\frac{1}{2}$) inches; at base, two and a half ($2\frac{1}{2}$) inches; at center, three and five-eighths ($3\frac{5}{8}$) inches, gradually increasing and diminishing respectively to the above dimensions. The top to be slightly flared and its edge turned over to form a bead one-eighth ($\frac{1}{8}$) of an inch in diameter. Holes for wire arms to be one-fourth ($\frac{1}{4}$) of an inch in diameter, and to be on opposite sides of the holder, at a distance of one (1) inch from the top. Air vent-hole, one-eighth ($\frac{1}{8}$) of an inch in diameter, pierced one and five-eighths ($1\frac{5}{8}$) inch from the top. Arms (part No. 2) to be of No. 3 standard gauge brass wire, drawn hard, with eyes bent on ends one-half ($\frac{1}{2}$) inch in diameter, tips pointed. Base of arms to pass through cast and turned brass sockets (part No. 3) and be securely riveted on interior of font-holder. The brass socket to be one (1) inch long, three-fourths ($\frac{3}{4}$) of an inch diameter at base, one-half ($\frac{1}{2}$) inch diameter at smaller end, and be milled off so as to fit surface of font-holder and be soft-soldered to it. Spread of arms about eleven (11) inches. Bottom (part No. 4) to be a brass casting, turned on the interior so as to fit lower edge of font-holder, and be turned, all on the outside. The inside surface at the branch-holes to be raised to a height of about one-fourth ($\frac{1}{4}$) of an inch, full, to afford proper support to the branches when connected. The holes for branches to be of proper size and to be one and nine-sixteenths ($1\frac{9}{16}$) inch apart, measured from center to center. This bottom casting to weigh not less than five and one-half ($5\frac{1}{2}$) ounces, and be attached to the font-holder with soft-solder.

Branches.—Two branches (part No. 5) to be made from brass tube of gauge No. 14, American standard, one-half ($\frac{1}{2}$) inch outside diameter, and weighing about four and a half ($4\frac{1}{2}$) ounces to the foot. Soft-soldered to the bottom of font-holder, and extending from it in a curve to the burners, to which they shall be attached also with soft-solder. The burner end of each branch to be provided with a cast connection (part No. 6), milled and fitted to same so as to form a strong and tight joint. Distance between center of burner and center of font-holder eight and one-half ($8\frac{1}{2}$) inches. Depth of curve of branch about four (4) inches from bottom of fontholder.

The suspending supports (part No. 7) to consist of two (2) brass-wire rods and a ring, all of gauge No. 9. The rods to be fourteen and three-quarter ($14\frac{3}{4}$) inches long when finished, bent in half ($\frac{1}{2}$) inch eyes on ring, and having half ($\frac{1}{2}$) inch **S** hooks, with tapered points on ends to hold the font-holder arms. Inside diameter of ring one and a half ($1\frac{1}{2}$) inch.

Burner.—Argand burner, according to pattern. Diameter of oil-reservoir (part No. 8), one (1) inch, gauge No. 26. Length, five (5) inches; pitch of threads, two (2) to the inch; depth of thread, three thirty-seconds ($\frac{3}{32}$) of an inch; width of thread, three thirty-seconds ($\frac{3}{32}$) of an inch; gauge of metal where oil-drip screws on, No. 21, made from seamless tube. Center tube (part No. 9), five-eighths ($\frac{5}{8}$) of an inch diameter, gauge No. 26; length, five and a half ($5\frac{1}{2}$) inches, attached to oil-reservoir with soft-solder. Oil-drip (part No. 10), one and three-fourths ($1\frac{3}{4}$) inch in diameter, and one and one-fourth ($1\frac{1}{4}$) inch deep, exclusive of knob; gauge of top, No. 20, of bottom shell, No. 24, the latter to be provided with a cast-brass knob, and be well filled with solder to prevent denting. Wick-raising tube (part No. 11), four and three-fourths ($4\frac{3}{4}$) inches long, and of diameter to fill oil-reservoir; top closed in to seven-eighths ($\frac{7}{8}$) of an inch diameter, seamless tube. Chimney-holder (part No. 12), a seamless shell, two and one thirty-second ($2\frac{1}{32}$) inches in diameter, outside; gauge, No. 25; height, one (1) inch; shell made to ship chimney-holder. (part No. 13), according to pattern, gauge No. 24; cone to fit shell, gauge No. 24. Tube-slide (part No. 14), of gauge No. 26, to fit over thread of reservoir and be clinched fast to burner-shell; top part to be closed in and riveted to wick-raising tube. The chimney-holder to be made detached from shell, so that it may be lifted off with chimney when lighting lamp.

Reflector.—A brass reflector (one for each lamp), part No. 15, nickel plated, gauge No. 25; diameter, ten (10) inches; depth, three and one-half ($3\frac{1}{2}$) inches; edge turned over to form a one-eighth ($\frac{1}{8}$) inch bead. Chimney-hole, two and one-fourth ($2\frac{1}{4}$) inches in diameter. Arms of No. 9 hard brass wire, riveted to a solid ring, which shall be two and one-thirty-second ($2\frac{1}{32}$) inches in diameter (inside), five-sixteenths ($\frac{5}{16}$) of an inch deep, and No. 13 gauge; the ends of arms to be drilled, tapped, and fastened to reflector with screws. See also drawing, attached, of reflector of different make.

Font.—A heavy flint-glass oil-font of form and dimensions according to pattern, about eleven (11) inches high by about four and a half ($4\frac{1}{2}$) inches diameter at widest part, the top to be flattened so that the font will stand on a level surface unsupported while being filled; to have a bead or shoulder around it at proper distance from the top to support it on the upper edge of font-holder when in position; to have an opening at bottom, with funnel-shaped mouth, for convenience in filling, provided with self-acting valve in conformity with drawings and model. Capacity of font, three (3) pints.

Chimneys.—For each burner a chimney of the best flint-glass according to pattern; length about ten and one-half ($10\frac{1}{2}$) inches; diameter at base (inside) one and three-fourths ($1\frac{3}{4}$) inch, with shoulder at height of about two and one-eighth ($2\frac{1}{8}$) inches; upper flue about one and one-eighth ($1\frac{1}{8}$) inch diameter.

The various parts of the lamp to be uniform, so that those of one will fit another, and the whole to correspond in design, finish, and construction with the drawings and the standard sample, and to be in no particular inferior to the latter. Where any differences are found to exist between the drawings and sample, the latter shall govern.

Each lamp when delivered shall be provided with wicks and be in complete order and ready for use upon being filled with oil.

For the guidance of manufacturers the weights of the various parts of the lamp are given below:

No. of the Part.	Name of Part.	Lbs.	Oz.
1	One Font-holder	..	$13\frac{14}{16}$
2	Two Font-holder Arms	..	$3\frac{6}{16}$
3	Two Font-holder Arm Sockets	..	$1\frac{10}{16}$
4	One Font-holder Bottom	..	$5\frac{6}{16}$
5	Two Branches	..	$10\frac{7}{16}$
6	Two Branch Connection Sockets	..	$\frac{12}{16}$
7	Suspending Supports	..	$5\frac{8}{16}$
8	Two Oil Cylinders	..	$2\frac{10}{16}$
9	Two Center Tubes	..	$2\frac{14}{16}$
10	Two Oil-drips	..	$2\frac{8}{16}$
11	Two Wick-raising Tubes	..	2
12	Two Tube Slides	..	$\frac{6}{16}$
13	Two Shells	..	3
14	Two Chimney Holders	..	2
15	Two Chimneys	..	$7\frac{8}{16}$
16	Reflector (one)	..	$10\frac{8}{16}$
	Glass Font (one)—not less than	2	..
	Total weight of Lamp complete	6	10

Exclusive of the glass parts (the font and chimneys), which are liable to vary considerably in weight, the average lamp should weigh, when finished, about four pounds and two and a half ounces (4 lbs. $2\frac{1}{2}$ ozs.).

Single-burner Bracket Lamp.

Font-holder.—The font-holder to be as described for double-burner lamps, except that it be without wire arms, and have but one branch and burner.

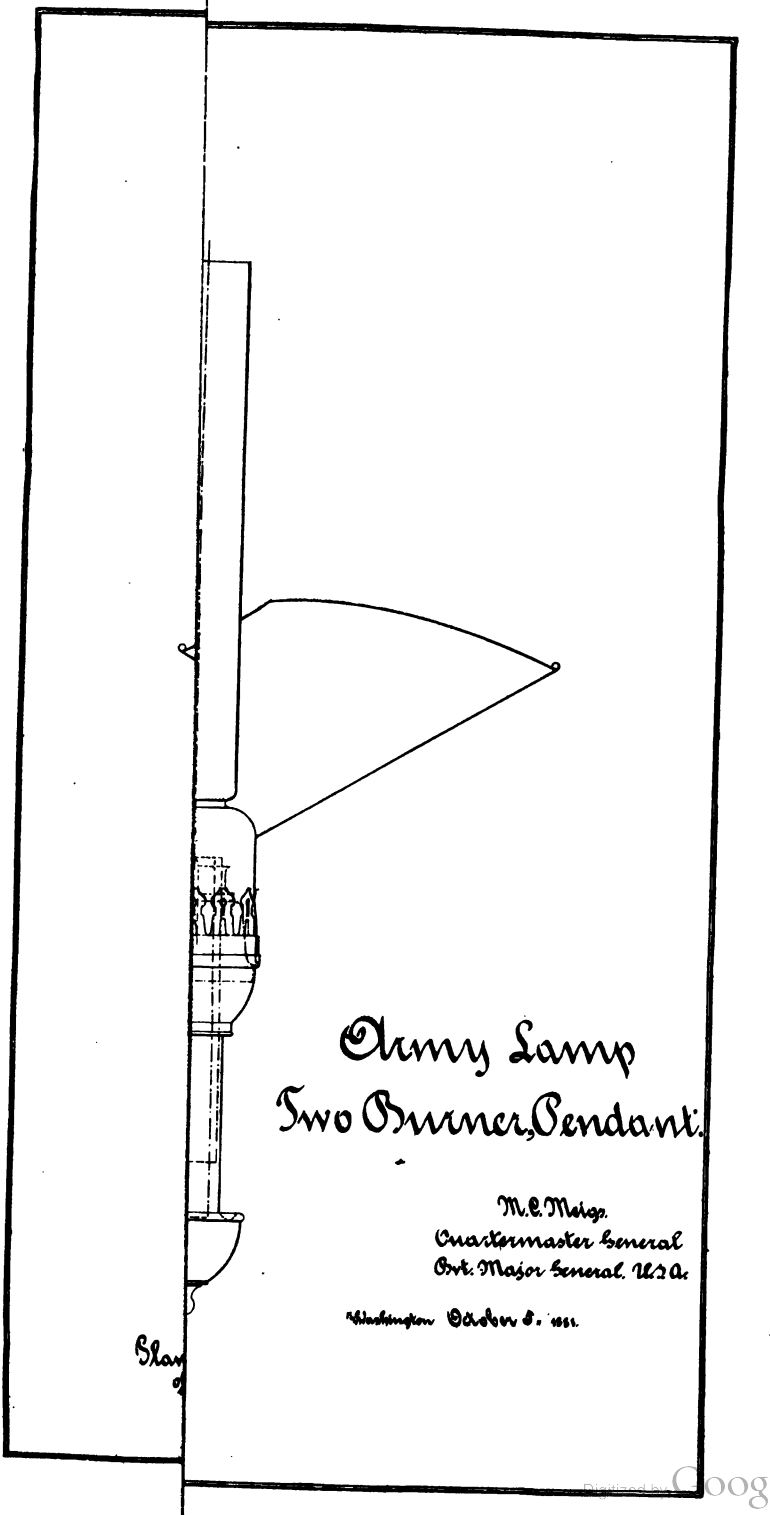
Other parts.—The burner, glass font, branch, chimney, and reflector to be as described for the double-burner lamp.

Bracket.—A japanned, malleable-iron supporting bracket, with socket to receive font-holder, according to the standard sample. Weight of bracket about thirteen ounces (13 oz.).

The weight of the bracket lamp to be the same as given for the double-burner pendant lamp, deducting that of the suspending supports, the arms of font-holder, and one branch, with its burner and chimney, and adding that of the bracket—making its average weight (exclusive of font and chimney) about three pounds and eight ounces (3 lbs. 8 oz.).

(Signed) JOHN F. RODGERS,
Captain and M. S. K., U. S. A.

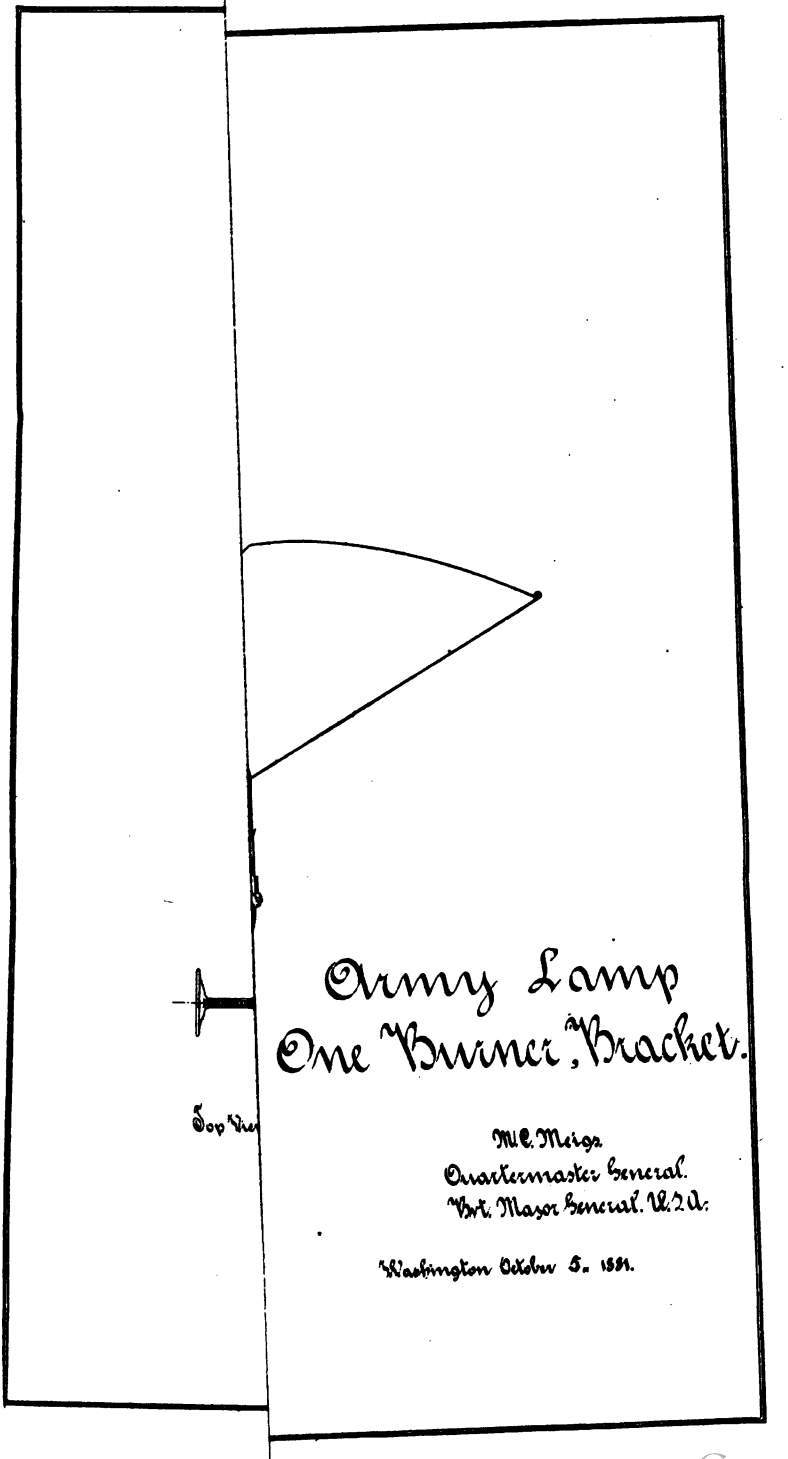
Philadelphia Depot of the
Quartermaster's Department,
Philadelphia, October 7, 1881.



Army Lamp
Two Burner, Pendant.

M. C. Meigs.
Quartermaster General
Brt. Major General. U.S.A.

Washington Octobr 8. 1861.



Army Lamp
One Burner, Bracket.

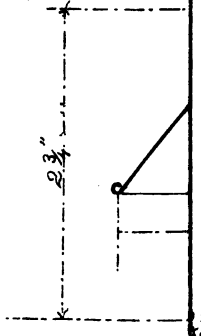
Top View

M.C. Meigs
Quartermaster General.
Brt. Major General. U.S.A.

Washington October 5. 1861.

Reflect

of Parabolic
for Army
properly adjus



the brightest part
ted (by tilting the
er opening is 2 inches
within 3/16 inches of
rum to the reflector) by
t enough to keep

uartermaster General.

al.

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFF

Specifications for Drum-Slings.

To be made of heavy two and one-eighth (2⅛) inch cotton cadet in *two pieces*, thirty-eight (38) and ten (10) inches long in the clear together by a leather frog, pear-shaped, three and five-eighths (3⅝) i long, two and five-eighths (2⅝) inches wide at the broadest, and one a half (1½) at the lowest part. The webbing to be let into the fr such way that the long part passes under the left arm and over the r shoulder, the short part over the right breast of wearer, and at such a that, when worn, it hangs perfectly smooth.

AN OBLONG TONGUELESS BUCKLE, two and five-eighths (2⅝) inc by one and a quarter (1¼) inch, of strong brass, five-sixteenths (5/16) of inch wide, with catch on inner side at the end of shorter part, and a sl of the same material seven-sixteenths (7/16) of an inch wide at the end longer part, for the purpose of lengthening or shortening the sling. Buck and slide both to be neatly fastened to webbing by three (3) rivets each.

A TRIANGLE of one-eighth (⅛) inch brass wire, to receive hook of dru at the lower end of frog, to which it is fastened by a leather loop l into the frog and securely stitched. Each side of triangle to be one (inch long.

Adopted January 15, 1883.

RUFUS INGALLS,
Quartermaster General,
Bvt. Major General, U. S. A.

(1711—Q. M. G. O., 1882.
C. & Eq. Supply.)

WAR DEPARTMENT,
QUARTERMASTER GENERAL'S OFFICE.

Specifications for Drums, complete.

PATTERN.—To be according to standard sample, and to weigh, complete, not to exceed four (4) pounds.

WOOD SHELL.—Maple veneered, dark red stained and varnished; sixteen (16) inches in diameter, and, including hoops, eight (8) inches high. Two (2) *hoops*. each one and one-quarter (1¼) inches in width, stained and varnished black, with two (2) grooves in each.

There should be painted on the outside of the shell of each drum the escutcheon of the arms of the United States, and upon the field of the same the letters U. S. in gilt, seven-eighths (⅞) of an inch long; and the contractor's name, with date of contract, on the inside of the shell, visible from the vent

Two (2) calf-skin *heads*, one (1) batter, and one (1) snare. Eight (8) *snares* of eight (8) strands each. Snares attached to drum by a long adjustable *snare-screw* fastened to both hoops. Eight (8) nickel-plated rods with right and left screw-threads to brass polished hooks on each end.

BELT HOOKS of stout brass wire, fastened to two (2) of the brass-rod hooks. Two (2) nickel-plated *wrenches* to accompany each drum. One (1) brass folding *knee-rest*, with spring.

Adopted January 15, 1883.

RUFUS INGALLS,
Quartermaster General,
Bvt. Major General, U. S. A.

(1711—Q. M. G. O., 1882.
C. & Eq. Supply.)